Buildable Land Inventory and Land Need Analysis for Corvallis

ATTENTION:
For the adopted analysis and conclusions, please see Appendix G (blue pages)

Prepared for:
The City of Corvallis

Prepared by:

ECONorthwest
99 W. Tenth, Suite 400
Eugene, OR 97401
(541) 687-0051

June 1998
(minor final revisions August 1998)

Table of Contents

Preface

This report was prepared by ECONorthwest: Terry Moore and Bob Parker are its principal authors. The Lane Council of Governments (LCOG) conducted a GIS evaluation of buildable and constrained land, assisted with the development of definition and assumptions for test evaluation, and prepared maps: Cress Bates and Jeff Schenck were responsible for that work. Greg Winterowd of Winterowd Planning Services advised on all aspects of the analysis and wrote large parts of the chapter on policies.

This report would not have been possible without the substantial assistance of staff and citizen groups at the City of Corvallis. Particular thanks goes to David Dodson, the City's project manager, who not only reviewed and advised on all aspects of this report, but also never failed to do immediately whatever was required to assure that the report was accurate, useful, and timely. We were greatly assisted by the City's well developed GIS capabilities, and particularly by Alice Grucza and Brady Callahan. Other Corvallis staff that provided valuable review and assistance include Linda Sarnoff, Ken Gibb, and Fred Towne. Doug Sackinger of Benton County made a special effort, despite a busy schedule, to deliver some needed assessment data in a GIS format.

Despite all the assistance, some errors are sure to remain in the document, and are ECO's responsibility. Errors of fact are relatively easy to correct once they are found. But some data sources are inherently limited by the way data can be collected. Any data intensive analysis has to make decisions about the appropriate relationship between analytical detail and cost. Among those decisions in this study was one to assign a single land use designation to each tax lot, even if the tax lot was covered by more than one designation. That decision preserved the schedule and budget, but created inherent discrepancies when large tax lots with multiple land use designations were assigned the predominant land use classification. The scope of this study did not allow a tax lot to reflect these other uses. Thus, acreage calculations within each category should not be viewed as absolute values, but as reasonable approximations of the amount of area within each land use category. Moreover, readers must realize that even accurate information about past and existing conditions does not ensure that the future will look like the forecasts contained in this report. The future is, by definition, uncertain. We have made a special effort to be clear about our definitions, assumptions, and forecasting methods. We have produced a forecast that meets or exceeds the professional standards for studies of this type, and complies with state regulatory requirements. Though it provides a solid basis for a 20-year planning analysis, different assumptions could lead to different conclusions.

THIS PAGE
INTENTIONALLY
LEFT
BLANK

Summary

The City of Corvallis is going through "periodic review" of its comprehensive plan as required by the Land Conservation and Development Commission. As part of that review it must update its estimate of buildable land (residential and non-residential) and assess whether it has sufficient buildable land within its Urban Growth Boundary (UGB) to accommodate the next 20 years of development that expected growth in population and employment will require. In addition, an evaluation of buildable land and land needs provides basic information to meet other requirements of the periodic review process.

The information presented in this report complies with the requirements of ORS 197.296 (House Bill 2709). It can also be of use in evaluating other policy discussions, such as:

- Update of Comprehensive Plan policies. One the one hand, a plentiful inventory of land within the UGB may provide more opportunity for natural resource protection measures to be implemented without requiring UGB expansion. On the other hand, a projected shortage of land supply may support policies to increase the density of land development in order to reduce the need for a UGB expansion.
- Updates of Comprehensive Plan land use map during periodic review.
- Review of future Comprehensive Plan amendments and land development applications.

The reader should consider the following points when considering the information contained within this report:

- The information reflects an analysis of land supply and demand at one point in time, in this case, July 1, 1996. Actions that have occurred after that time will not be accounted for in the data presented or conclusions reached in this report.
- The report was developed with consideration of past trends and is based on a range of assumptions about the amount and characteristics of land supply and future growth. Trends and assumptions are subject to changes that impact their applicability.
- Estimates of buildable land are based on numerous assumptions and other factors (e.g. data availability, computer assignment of a single land use classification to all parcels, assumptions about redevelopment). These estimates should be interpreted as a reasonable approximation of the amount of area in each category, not as an absolute value.
- The report discusses the issue of long-run land supply inventories and short-run constraints such as zoning, service availability and market forces that impact the amount of land available for development. The potential of having an adequate long-term supply of various land use types while simultaneously experiencing short-term scarcity of parcels ready for development at prices developers are willing to pay should be considered when the City develops policies or makes

decisions on land development proposals or other decisions that affect land use or development.

- As policy, mapping, and other land use decisions are made, it should be recognized that many other factors need to be considered. For example, Statewide Planning Goal 9 provisions may require that the City look at the parcelization patterns and serviceability of industrial land in addition to the basic inventory of acreage established through the supply and demand analysis. Other data sources, community desires, and experiences may also be pertinent. Periodic review also requires the City to address any new planning requirements adopted by the State since the City's last review of its Comprehensive Plan. In particular, ORS 197.296 (originally HB 2709) specifies many of the details that a housing needs analysis must consider.

A land inventory and need analysis that complies with state requirements for long-run planning is not the same as a market analysis for a development proposal, which typically has a short-run view (1-3 years). In the short-run, land available for development may be constrained by lack of proper zoning, lack of services, neighborhood opposition to development, the situation and expectations of land owners and users, and so on. In the long-term, it is reasonable to assume that prices, preferences, and policies will adjust so that land that is vacant and buildable becomes available for development. Thus, it is not uncommon for a long-run land need inventory to find ample land supply to meet state requirements at the same time land and housing prices are rising and developers and builders are having difficulty finding buildable land at prices they are willing to pay.

Those details are addressed in this report. The summary that follows focuses only on the conclusions of the report.

The City has sufficient land within its UGB to accommodate population and employment growth under a wide range of assumptions about the amount and characteristics of growth and land

Table S-1 shows estimated future land need and supply by plan designation for the Corvallis UGB between 1996 and 2020. The estimated total land need, for all types of land, is 1,845 vacant, unconstrained acres for the period between 1996 and 2020. The estimated supply is 6,824 unconstrained vacant or redevelopable acres in 1996.

The land need/supply comparison shown in Table S-1 indicates that Corvallis has sufficient buildable lands within its UGB to meet needs between 1996 and 2020. Moreover, a comparison of land need and vacant or redevelopable lands inside the city limits indicate that Corvallis has a net surplus of about 500 acres of buildable land.

Table S-1. Comparison of land need and land supply, Corvallis UGB, 1996-2020

Plan Designation	Land Need		Land Supply			
	Net Acres	Gross Acres	Unconst. Vacant Acres	Redev Acres[a]	Total Buildable Acres	Surplus/ Deficit
Agriculture			174		174	174
Commercial/Office						
Commercial (CB/LC/SA)	60	76	109	27	136	60
Office (PAO)	176	220	32	1	33	-187
Comm/Office Total	**237**	**296**	**141**	**28**	**169**	**-127**
Industrial						
Heavy Industrial (GI/II)	35	44	1,101	49	1,150	1,106
Light Industrial (LI/RTC)	86	108	82	4	86	-22
Industrial Total	**121**	**152**	**1,182**	**53**	**1,236**	**1,084**
Intensive Development Sector[b]			**465**	**0**	**465**	**465**
Public-Institutional	**525**	**657**	**94**	**0**	**94**	**-563**
Residential						
Low Density Residential	337	438	3,876		3,876	3,438
Medium Density Residential	122	156	673		673	516
Medium-High Density Residential	101	126	99	7	107	-20
High Density Residential	16	21	7	8	15	-5
Residential Total	**576**	**741**	**4,655**	**15**	**4,670**	**3,930**
No Plan Designation				**16**	**16**	**16**
Total, All Designations	**1,460**	**1,845**	**6,711**	**113**	**6,824**	**4,979**

Source: ECONorthwest, 1998.

[a] Redevelopable land includes commercial, industrial and multi-family residential (medium-high and high) land.

[b] No land need was allocated to this sector. The Intensive Development Sector is a mixed use designation that can accommodate residential and commercial uses.

A land inventory and need analysis that complies with state requirements for long-run planning is not the same as a market analysis for a development proposal, which typically has a short-run view (1-3 years). In the short-run, land available for development may be constrained by lack of proper zoning, lack of services, neighborhood opposition to development, the situation and expectations of land owners and users, and so on. In the long-term, it is reasonable to assume that prices, preferences, and policies will adjust so that land that is vacant and buildable becomes available for development.

Thus, it is not uncommon for a long-run land need inventory to find ample land supply to meet state requirements at the same time land and housing prices are rising and developers and builders are having difficulty finding buildable land at prices they are willing to pay. Such appears to be the case in Corvallis, where the median sales price of homes increased almost

15% per year between 1990 and 1996. This report gives several reasons (e.g., lack of large-scale developers or builders, lack of parcels of sufficient size to allow large-scale development, annexation voting, speculation on vacant land, the cost of providing infrastructure) that explain why short-run problems with land availability and housing price can exist even when a long-run analysis shows ample land to accommodate expected growth.

The City generally has sufficient land designated residential and industrial to accommodate expected growth, but some minor adjustments should be considered

State statutes and good planning require a more detailed evaluation to determine whether the buildable land inside the UGB is planned in such a way that the amount of buildable land by plan designation (e.g., medium-density residential) is adequate to meet the needs for that use. It is obviously possible to have a surplus of land in the UGB in the aggregate, but not enough land designated for certain types of use.

Not only does Corvallis have more than sufficient buildable land within the existing urban growth boundary to meet long-term growth needs; it also has sufficient buildable land designated for residential and industrial uses to meet projected needs for these broad land use categories. Some issues that require attention, and possible policies, are:

- *Residential land*—a small deficit of land (estimated at 25 acres) exists in the Medium-High- and High-Density Residential designations. Some additions to the medium-high-density plan designation from either of the lower-density residential designations would be appropriate.

- *Industrial land*—a small deficit of land (estimated at 22 acres) exists in light industrial designations (LI/RTC). The City should either (a) continue to rely on its existing over-supply of Industrial land (GI/II) to meet Light Industrial needs, or (b) re-designate some Industrial land to Light Industrial to assure greater compatibility and choice among alternative Light Industrial sites.

- *Commercial/Office land*—a substantial deficit (estimated at 187 acres) exists in land designated for office uses. The City could (a) continue to rely on its existing over-supply of Commercial land to meet more specific Office Commercial needs, and (b) re-designate some Commercial land (LC or SA) to Office (PAO) to assure greater compatibility and choice among alternative office commercial sites.

- *Public/institutional land*—a substantial deficit (estimated at 563 acres) exists for public/institutional land. Well over half of the need derives from the City's policy stating that it should add 35 acres of parkland for every 1,000 people added to the City's population. For these uses the City is probably not required to re-designate land to address the potential deficit. The City can rely on its oversupply of low-density residential land, its subdivision and PUD process, and the land taken out of the buildable land inventory because of its natural features (e.g., steep slopes, wetlands) to meet much of this need.

The City generally meets the more detailed requirements of State housing policy

Manufactured homes on individual lots are permitted in all of the City's residential districts. Just the City's zoning districts that implement Low-Density Residential (RS-3.5, RS-5 and RS-6) contain more than enough land for residential development. There is no need to determine the need for manufactured homes on individual lots separate from the need for single-family housing in general.

Manufactured dwelling parks must be allowed in a zone or zones that allow from 6-12 dwelling units per acre. Table 5-1 shows the City's Medium-Density Residential designation (which allows 6-12 dwelling units per acre) has a significant surplus of buildable land, as indicated on. Therefore, the City has sufficient buildable land to meet identified need for manufactured home parks.

Much of the shortage of buildable land exists in the Medium-High- and High-Density Residential plan designations will be handled through development and re-development in the City's mixed-use zones. The City should consider, however, rezoning some Low-Density or Medium-Density Residential land to Medium-High- and High-Density Residential.

Corvallis has not established special review standards for government assisted or farm worker housing. These housing "types" are allowed on within the City's residential zoning districts based on review standards that apply equally to all proposed housing developments, regardless of funding sources or end-users. Thus, these housing types are subsumed within the broader single-family and multi-family categories and subcategories.

Chapter 1 Introduction

1.1 BACKGROUND

The City of Corvallis is going through periodic review of its comprehensive plan as required by the Land Conservation and Development Commission. As part of that review it must update its estimate of buildable land (residential and non-residential) and assess whether it has sufficient buildable land within its Urban Growth Boundary (UGB) to accommodate the next 20 years of development that expected growth in population and employment will require.

Periodic review requires the City to address any new planning requirements adopted by the State since the City's last review of its comprehensive plan. The most directly relevant of those requirements to a land need assessment are those of ORS 197.296 (originally HB 2709), which requires that the City:

- Prepare a buildable lands and housing demand analysis to document, among other things, trends during the last five years for land absorption (i.e., the amount of buildable land that gets converted to development)
- Forecast future need for land, by type of use, and within residential use, by housing type
- Ensure that there is enough buildable land to accommodate 20 years of growth.

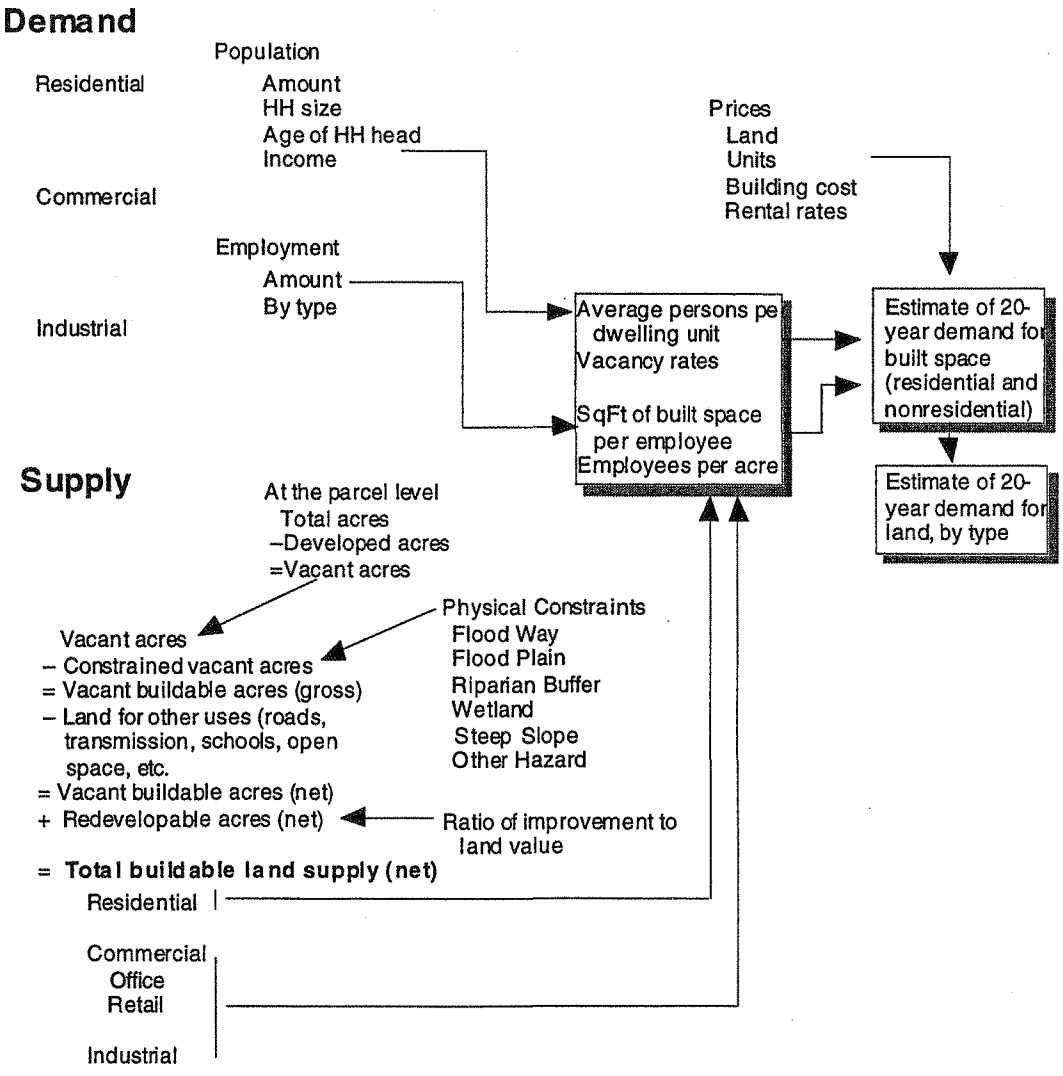
In addition, an evaluation of buildable land and land needs provides basic information to meet other requirements of the periodic review process.[1]

1.2 METHODS

In general, a Land Need Assessment contains a *supply* analysis (buildable and redevelopable land by type) and a *demand* analysis (population and employment growth leading to demand for more built space: residential and non-residential development). Figure 1-1 shows the key relationships. The geographic scope of the Land Need Assessment is all land inside the Corvallis Urban Growth Boundary.

[1] For example, statewide planning Goal 9 (Economy of the State) an assessment of the need for industrial and commercial land, and the amount of buildable land available to meet that need. Specific requirements are described on Oregon Administrative Rules, Chapter 660-009: Industrial and Commercial Development. Some of the requirements for the economic opportunity analysis are addressed in this report.

Figure 1-1: Components of a Land Needs Assessment



1.2.1. LAND SUPPLY

The methods we use to evaluate land supply were developed in coordination with the City's Work Groups and Buildable Lands Committee, which ultimately approved them. They are described in detail in Appendix B. The general structure of the supply analysis is based on the DLCD HB 2709 workbook, which specifically addresses residential lands. We use similar methods for commercial, industrial, and other lands. The steps and sub-steps in the supply inventory are:

- Calculate the gross vacant acres by plan designation, including fully vacant and partially vacant parcels.
- Calculate gross buildable vacant acres by plan designation by subtracting unbuildable acres from total acres.
- Calculate net buildable acres by plan designation subtracting land for future public facilities from gross buildable vacant acres.

- Calculate total net buildable acres by plan designation by adding redevelopable acres to net buildable acres.

The supply analysis builds from a parcel-level database to sub-area estimates of buildable land by generalized land use type (e.g., residential, commercial, industrial).[2] Two types of use are not included in the buildable land inventory:

- *Parks/Open Space/Agriculture*: No development is expected on existing park and designated open space lands within the UGB. Since the majority of land designated for Agriculture in the UGB is owned by OSU, we assumed that it would not convert to urban (the typical assumption is that land inside a UGB designated for agriculture will convert to urban uses during the planning period).
- *Institutional Use*: Most publicly owned parcels are parks, governmental, or public facilities and are considered unavailable for development. The exceptions are (1) the City-owned airport industrial park, which is leasable land intended for urbanization, and (2) the more-or-less developed area of land owned by OSU, which will almost certainly support future expansions that will accommodate employment and residences. (But since OSU expects no net employment growth over 20 years, and any residences would be group quarters not part of the City's housing inventory, the analysis does not require specific forecast for OSU.)

For other generalized land use types, each parcel was determined to be developed or undeveloped. If undeveloped in whole or in part, it was classified as follows:

- *Vacant Land*: parcels greater than 0.075 acre (3,250 sq. ft) with improvement value less than $5,000.
- *Partially Vacant (Under-Utilized) Land*: parcels greater than 0.075 acre (3,250 sq. ft) with improvement value greater than $5,000 that have a developable remainder.[3]
- *Constrained Land*: constrained land is subtracted from Total Vacant and Partially Vacant Land to get Buildable Land (which is further divided into totally vacant and partially vacant based on parcel boundaries and existing development on parcels). There are several categories of constraints:
  - Floodway/floodplains[4]

---

[2] The parcel-level database was based on information from the Benton County Assessor and the Corvallis Geographic Information System (GIS). The base data in the GIS system was supplemented with additional land use data gathered by LCOG and City staff. To estimate the amount of acreage for certain types of constraints (e.g., undelineated wetlands), some of the data were derived based on the rules described in Appendix B. While these data were attributed to parcels in the database to allow subarea estimates, the data are not accurate for any given parcel, and can not be applied at that level.

[3] See Appendix B for exact definitions.

[4] Floodways are considered constrained lands based on regulations that prohibit development in floodways (Section 4.5.70, Corvallis Land Development Code). Floodplains (called the "Floodway fringe" in the City Code) are not

- Wetlands
- Drainageways and riparian buffers
- Hazardous land: slide areas, steep slopes, and earthquake faults
- Lands Above Third Level Water Service (560' in Elevation)

If the above criteria resulted in a determination that a parcel was totally developed, it was then evaluated to determine whether it was redevelopable and thus might help accommodate new growth over the analysis period.

- *Redevelopable Land*: parcels with lower-value structures that are judged as likely to be demolished for new buildings to be constructed in their place. Redevelopable Land means all commercial, multi-family residential (District Designation RS-12 or RS-20), or industrial parcels, that are greater than 0.1 acres *and* have land values greater than improvement values *and* are not already classified as vacant or partially vacant.

1.2.2. LAND DEMAND

Demand for land is characterized through analysis of national, regional, and local demographic and economic data. For residential uses, population and households drive demand. For the residential sector, for example, information about the characteristics of households is used to identify types of housing that will be sought by households. For non-residential uses, employment data is the primary driver of demand for land, and is used to estimate probable absorption rates for commercial and industrial lands.

1.2.2.1. RESIDENTIAL LAND

Accepted economic theory, as applied to real estate markets, is clear that the amount of housing built and purchased in a market is a function of demand factors (e.g., demand for housing by type, driven by number of households, incomes, preferences, and prices of alternatives), supply factors (e.g., the type and quality of the housing product, and the factors that influence the cost of that product and its substitutes), and prices (of the particular housing product and its substitutes by type, quality, and location). In short, though observed housing absorption results from the interaction of many factors, almost no forecasting models used in Oregon planning work that way. Rather, they forecast demand and supply independently, and rarely have even a qualitative (much less quantitative or modeled) analysis of prices.

There are two exceptions we are aware of. One is ODOT's work in progress on developing an integrated land use and transportation model for the Eugene/Springfield metropolitan area. This is a huge, state-of-the art

---

considered constrained, because the City Code allows development in these areas, providing it meets the standards described in Section 4.5.60.

project with a budget over 10 times that for the Corvallis project. The other is work done by Metro in Portland over the past several years to develop a housing forecasting model that explicitly considers household preferences (based on demographics) and prices.

For this project we supplemented the required and topical descriptive analysis of key variables with a version of Metro's Real Estate Location Model (RELM) to Corvallis. The RELM model works by equilibrating demand for residential housing units with supply through changes in price. These price changes feed back into the model, changing the quantities demanded and supplied until a balance is achieved.

The version of the RELM model we used divides households into 64 categories, each a combination of one of four household size classes, one of four household income classes and one of four age of household head classes (four times four times four is 64). Metro abbreviates these categories as HIA (for Household size-Income-Age). It then predicts the number of housing units, by type, that households in each HIA will demand, taking into account the price levels prevailing in the local market.

As prices increase, the model assumes that households of a given HIA category will choose smaller lot sizes, choose smaller house sizes, and choose a higher proportion of multi-family units. As household size increases, people choose larger houses and a higher proportion of single-family units, all else the same. Increasing incomes has the opposite effect as increasing price. Increasing the age of the household head has little effect, all else the same, and the effect varies depending on where one starts (i.e., the effects of age on housing demand are not uniform over the life cycle).

RELM predicts the number of units by price class, by single- or multi-family, and by tenure (owner- or renter-occupied) that will be consumed within a geographic area. It can be run a number of different ways, and any number of constraints may be applied. We calibrated a base-case model to 1990 data and then substituted in a 2020 population of households and constrained the real price to remain constant. That allowed us to determine the number of new units, by type, that would be required to serve the forecasted population while maintaining current price levels. Note that while the price level for equivalent units remains constant, the average price does increase because, as incomes increase, the average dwelling unit becomes larger and more expensive.

To make RELM work, we needed HIA distributions for 1990 and 2020. The best available data for 1990 were from the 1990 Census Public Use Microsample data (PUMS). The PUMS data allow us to calculate the proportions of PUMS-area population in each HIA category, but Corvallis does not have its own PUMS area. Through the PUMS area containing Corvallis also included the rest of Linn and Benton Counties, Corvallis makes up a large proportion of the population, and the urban areas of the counties accounted for 61% of the two county population. Thus, the PUMS data is a reasonable approximation for Corvallis.

No 2020 forecasts for Corvallis or Benton County provide the detail necessary to calculate future HIA distributions. The Center for Population

Research and Census at Portland State University (CPRC) does break its forecast for Benton County into age cohorts, so we started with changes in age distributions. From the 1990 HIAs, we calculated relative frequencies for each income and household-size category given membership in a particular age category. We then applied those conditional probabilities to the new age distribution from the CPRC forecast to obtain an estimate of the complete distribution of 2020 HIAs. We scaled the new HIA distribution by the forecasted 2020 population and adjusted for the expected change in average household size (about three percent smaller as a result of the aging of the population).

We then ran the calibrated RELM model with the new HIA distribution and obtained changes in the number of housing units by type that would be required to keep supply and demand in balance without real price increases and to accommodate the forecasted population increase. The RELM model also allows one to calculate the land consumed by single-family units (net acres). For multi-family units, we used the net density for actual construction from 1993 to 1996. We used the ratio of net acres to gross acres for actual construction from 1993 to 1996 to convert net acres to gross acres for both single- and multi-family units.

We used the output from the model, our work on previous projects regarding the markets for different housing types, data on housing sales in Corvallis, and interviews with local real estate professionals to supplement our basic descriptive analysis of key variables affecting demand and supply.

1.2.2.2. COMMERCIAL AND INDUSTRIAL LAND

Several methods exist to determine commercial and industrial land need. The method most appropriate depends on the data available. Basic methods such as extrapolation of past development trends or ratios of acres per employee or per total land area are appropriate for small communities where data are limited. These methods, however, only forecast land demand in the aggregate: they cannot provide reliable estimates by sector or type.

For larger communities that have better data sources, forecasting industrial land need is usually based on ratios of employee per land area (acre). The basic steps in this analysis are:

- *Develop employment projections.* Based on historic data and regional and statewide projections, we develop a sector-level employment projection for Corvallis.
- *Analyze existing employment patterns by sector.* This step estimates the amount of industrial employment on non-industrial land, the amount of non-industrial employment on industrial land, and the ratio of office and non-office employment for various industrial sectors.
- *Determine employee per acre ratios.* Few empirical analysis of employee per acre ratios exist. For this study, we use ratios we have developed in previous studies.

- *Apply the ratios to employment forecasts by sector.* This step applies employment per acre ratios to changes in employment by sector between 1996 and 2020. The output of this analysis is an estimate of land demand by employment sector. For the largest employers in Corvallis (including OSU and Hewlett-Packard) we will allocate employment by hand. For OSU, for example, even though its employment may be growing, it can probably be accommodated on land that we are not considering as part of the buildable land inventory anyway.
- *Determine aggregate demand for employment-supporting land.* This step divides the employment estimated in the previous step to that which is likely to locate on industrial and commercial (divided, to the extent possible, into office and retail) land, and that which is likely locate on non-industrial lands. The final result is an estimate of the demand for industrial, retail, and office land.

1.2.2.3. PUBLIC AND INSTITUTIONAL LAND

All things being equal, land used for public facilities such as schools, hospitals, governments, churches, parks, and other non-profit organizations will expand as population increases. Many communities have specific standards for parks. School districts typically develop population projections to forecast attendance and need for additional facilities.

With one exception, the assumptions applied to the supply analysis consider public and institutional lands unavailable to meet land needs for residential, commercial, and industrial uses. The exception to this is that all non-aeronautical lands owned by the City surrounding the airport. The issue to consider is whether *additional* public and institutional land will be required over the analysis period. For the purpose of this analysis, we use the following assumptions regarding public and institutional lands:

- *OSU holds sufficient land for expansion over the analysis period.* Lands owned by OSU will not be considered available for other uses, and the University will not require additional land for expansion.
- *115 acres will be required for parks.* This is consistent with the assumption in the supply portion of this analysis.
- *Other public and institutional uses are covered by the gross-to-net acreage factor.* The supply analysis assumes that between 20%-25% of buildable residential land will be required for public and institutional uses. This factor includes all public and institutional uses except OSU and parklands which are described above.

1.2.3. OTHER ISSUES

Other issues that arise in analyzing a community's land needs include time periods of projections and forecasts, differences in geography for different data sources, and the precision of the data.

The date of the inventory must be made to coincide with the beginning date of population and employment forecasts. The vacant land data need to match with the 20-year forecast period to ensure that a portion of land need

is not being attributed to land that is already developed, or was vacant at the beginning date of the forecast.[5] This study uses a base date of June 1996. An important implication of this assumption is that there will not–cannot–be a perfect match between the tax lot level information this report is based on, and actual development status at that tax lot. Parcels have developed since 1996. Review by the City staff and Work Groups updated some of the changes, but we did not conduct a parcel-by-parcel analysis to update the inventory to June 1998. Nor would it have been appropriate unless we had also updated the population and employment forecasts.

As an example of differences in geography, consider population forecasts, which are available for the City of Corvallis. Should the City forecast be considered a forecast for just city limits, or for all land in the UGB? We discuss this issue and clarify our assumptions in Chapter 3.

Precision of numbers is another key issue. The supply inventory is based on GIS data that provide areas of parcels to four decimal places. Chapter 3, for example, reports acreages in tables to one decimal place. To allow the reader to easily track numbers between text and tables, the text also gives figures to one decimal place. The quality of the data as aggregated to the community level, however, is not accurate to tenths of an acre. The figures presented in the supply tables should not be considered as the absolute amount of land available for development, but as estimates that are accurate to the tens of acres. That is a level of accuracy that is more than sufficient to make a determination of whether sufficient supply of buildable land exists to meet a 20-year need.

Finally, this study relies on a number of specific definitions that were agreed upon by the Work Groups, the Buildable Lands Committee, city staff, and the consultant. The glossary presented in Appendix A provides definitions of key terms.

1.3 ORGANIZATION OF THIS REPORT

This report is organized along the lines implied by the methods just described:

- *Chapter 2* sets the stage for the supply and demand analysis with an overview of some economic and demographic trends in the Northwest, state, and the Corvallis region.
- *Chapter 3* describes the demand analysis: how much land is growth likely to require over the next 20 years?
- *Chapter 4* describes the supply analysis: how much buildable land—by type, parcel size, and location—is available inside the Corvallis UGB?

[5] Some land needs assessments assume that vacant land that have an approved building permit is not truly vacant. The fact that a vacant parcel may have been issued a building permit that has not resulted in construction as of the effective date of the analysis (July 1996) does not keep that parcel from accommodating some of the demand forecasted to occur after that date.

- *Chapter 5* compares the supply and demand to comment on where shortages or surpluses are likely to exist.
- *Appendix A* is a glossary of terms
- *Appendix B* provides details about the methods, data, and assumptions used in estimating buildable land.
- *Appendix C* describes the sources for and assumptions regarding the population and employment forecasts that are the basis for estimates of demand for residential and non-residential land.
- *Appendix D* contains tables of socioeconomic and demographic data for the Corvallis city limits and the Urban Growth Boundary.
- *Appendix E* contains detailed tables on the supply of land.
- *Appendix F* contains projected growth in employment and resulting land need for Corvallis' largest employers.

Chapter 2

Development Trends

Development trends are important indicators of historic and future land demand. This section summarizes factors that help characterize the historical and projected demand for land within the Corvallis study area. It begins by describing historical trends in population and employment growth in Oregon, Benton County, and the City of Corvallis. It then summarizes land development trends within the Corvallis UGB and in the Corvallis Urban Fringe Area. Finally, it presents forecasts for population and employment for Corvallis, as well as for the State and Benton County.

This chapter is intended as an overview. It does not come to conclusions about the trends it describes, nor does it describe them in detail. Chapters 3 and 4 provide details about the demand for and supply of land. Chapter 5 comes to conclusions about how well demand and supply match.

2.1 POPULATION AND EMPLOYMENT TRENDS

Table 2-1 shows total population for Oregon, Benton County, and Corvallis between 1990 and 1997. Population in Corvallis increased at an annual rate of about 1.9%—a rate significantly higher than the 1.1% annual rate experienced by Benton County.[1]

Table 2-1. Historical population trends for Oregon, Benton County, and Corvallis 1990-1997

Year	Oregon	Benton County	Corvallis
1990	2,842,321	70,811	44,757
1991	2,930,000	71,900	45,780
1992	2,979,000	72,900	45,470
1993	3,038,000	73,300	46,260
1994	3,082,000	75,400	46,195
1995	3,132,000	75,500	47,487
1996	3,181,000	76,000	49,275
1997	3,217,000	76,700	51,145
Annual Growth Rate[2]	1.8%	1.1%	1.9%

Source: Center for Population Research & Census, PSU.

[1] There are some internal inconsistencies with the PSU estimates that are difficult to accept. In particular, Corvallis, which is entirely within Benton County, is estimated to have increased population by 6338 between 1990 and 1997, while Benton County increased population during the same period by only 5889. The only way both estimates could be correct would be if the rest of Benton County outside Corvallis lost population. Given the level of building permits issued by the County and other municipalities, such a loss does not seem likely.

[2] Throughout this report we use "Annual Growth Rate" to mean the annual rate of increase between two years which, if applied each year, would cause the value in the first year to grow to the value in the second year (like compound interest on a savings account).

Consistent with national and regional economic trends, employment growth in Oregon and Benton County was strong between 1990 and 1996. Total employment in the three areas grew at two to three times the rate of population growth for the same period. Not surprisingly, unemployment rates generally decreased during this period also.

Table 2-2. Historical employment trends for Oregon and Benton County, 1990-1996

Year	Oregon		Benton County	
	Total Emp	Unemp Rate	Total Emp	Unemp Rate
1990	1,407,000	5.5%	34,330	5.0%
1991	1,420,000	6.0%	34,640	4.0%
1992	1,426,000	7.5%	34,620	4.1%
1993	1,480,000	7.3%	36,240	3.4%
1994	1,551,000	5.4%	38,550	2.6%
1995	1,570,000	4.8%	40,340	2.2%
1996	1,619,400	5.9%	41,820	2.7%
Annual Growth Rate	2.4%		3.3%	

Source: Office of Economic Analysis, Oregon Employment Department.

Table 2-3 shows total employment, by sector, for Corvallis in 1990.[3] We present 1990 Census data because no published estimates of current employment exist for Corvallis. The three largest employment sectors in 1990 were professional and related services (43%), retail trade (19%), and manufacturing (13%). These totals are greatly influenced by the presence of Oregon State University, Hewlett-Packard, and the local health care service facilities.

The lack of an official estimate of current employment for Corvallis does not eliminate the need for one. An estimate of future need for commercial and industrial land needs is almost always made as a function of the expected employment growth that must be accommodated. The most accurate approach to estimating employment in a community is to use the Bureau of Economic Analysis (BEA) Section 202 tapes. The 202 data provide estimates of employment by business address, which allows estimates for subareas like city boundaries. We have used the 202 tapes in other studies, but always in cases where a public agency (usually a Council of Governments) already had access to the data (whose use is restricted to protect confidentiality) and had made the considerable effort required to correct several types of problems inherent in the data sources. The scope for this project did not include developing detailed subarea employment forecasts.

[3] The U.S. Census employment figures only include persons in a city who also *work* in that city.

Though employment estimates do not exist for the city limits or UGB of Corvallis, they do exist for Benton County. One can use them to place a reasonable bound on employment in Corvallis using ratios. In 1996, about 65% of Benton County's population lived in Corvallis. Moreover, other things equal, one would expect employment to be more concentrated in urban areas; residences are easier to create outside UGBs than jobs. Corvallis is the major employment center for Linn and Benton Counties—data on major employers in Corvallis further suggest that the city has a net inflow of jobs. Thus, the ratio of employment in Corvallis to employment in Benton County is likely higher than the ratio of population.

Table 2-3. Total employment for Corvallis, by sector,1990

Employment Sector	Total	Percent
Agriculture, forestry, and fisheries	696	3.4%
Mining	5	0.0%
Construction	511	2.5%
Manufacturing, nondurable goods	601	3.0%
Manufacturing, durable goods	1,990	9.8%
Transportation	299	1.5%
Communications and other public utilities	194	1.0%
Wholesale trade	323	1.6%
Retail trade	3,807	18.7%
Finance, insurance, and real estate	819	4.0%
Business and repair services	668	3.3%
Personal services	588	2.9%
Entertainment and recreation services	270	1.3%
Professional and related services		
Health services	1,228	6.0%
Educational services	5,827	28.7%
Other professional and related services	1,763	8.7%
Public administration	717	3.5%
Total	20,306	100.0%

Source: 1990 U.S. Census.

Discussions with staff at the Oregon Employment Department and the Corvallis Economic Development Partnership place the upper bound on the ratio of employment in Corvallis to employment in Benton County at 80%-85%. The Census shows that about 60% of Benton County employment was in Corvallis in 1990. This figure, however, probably underestimates the ratio because the Census counts employment by place of residence, not place of work. A reasonable middle point would be 70%-75%. Based on the labor force ratios and other data we estimate that total employment in Corvallis was about 30,558 in 1996.

Much of total employment in Corvallis can be attributed to a relatively small number of businesses that specialize in education, health care, government services, and high-technology. As Table 2-4 shows, the ten largest employers in Corvallis were responsible for about 18,000 jobs in 1997. Given our estimate of employment, Oregon State University and Hewlett-Packard account for about 45% of City's total employment.

Table 2-4. Total employment for the ten largest employers in Corvallis, 1997

Employer	Total Employment
OSU	7,473
Hewlett-Packard	6,500
Corvallis School District	924
Good Samaritan	950
Corvallis Clinic	550
City of Corvallis	378
EPA	300
Benton County	330
CH2M Hill	325
Summit Info Systems	270
Total	18,000

Source: Corvallis-Benton County Economic Development Partnership, Inc. January 1998.

Another way to evaluate the economy of an area is to develop location quotients for each primary employment sector. Location quotients evaluate the degree that a region specializes in a certain employment sector by comparing the ratio of employment within an employment sector in a community to the ratio of total community employment to the total county or state employment. Location quotients are calculated using the formula below:

$$\frac{\text{Sector Employment in Corvallis}}{\text{Sector Employment in Benton County}} \div \frac{\text{Total Employment in Corvallis}}{\text{Total Employment in Benton County}}$$

In developing location quotients for Corvallis, we compared employment in Corvallis with Benton County and Oregon as a whole. Table 2-5 shows 1990 location quotients for each employment sector in Corvallis. A location quotient exceeding 1.0 implies a specialization and comparative advantage: it means employment of a certain type is relatively more important in one area than in the area to which it is being compared. The sectors in Corvallis that had the highest quotients in 1990 were educational services (1.25), entertainment and recreational services (1.25), personal services (1.16), and retail trade (1.1). The industrial-related sectors with the highest quotients

were durable (0.76) and nondurable manufacturing (0.91). The durable manufacturing figure is probably significantly underestimated due to the way the Census gathers the data.[4]

Table 2-5. Location quotients in Corvallis, By Sector,1990

Employment Sector	Area			Location Quotient	
	Oregon	Benton County	Corvallis	Corvallis/ Benton Co	Corvallis /Oregon
Agriculture, forestry, and fisheries	66,730	1,892	696	0.60	0.68
Mining	2,479	54	5	0.15	0.13
Construction	74,206	1,215	511	0.68	0.45
Manufacturing, nondurable goods	61,873	1,070	601	0.91	0.63
Manufacturing, durable goods	171,335	4,235	1,990	0.76	0.75
Transportation	55,283	715	299	0.68	0.35
Communications and other public utilities	31,006	459	194	0.69	0.41
Wholesale trade	61,938	673	323	0.78	0.34
Retail trade	239,010	5,619	3,807	1.10	1.04
Finance, insurance, and real estate	78,671	1,338	819	0.99	0.68
Business and repair services	60,660	1,047	668	1.04	0.72
Personal services	40,768	823	588	1.16	0.94
Entertainment and recreation services	17,650	352	270	1.25	0.99
Professional and related services					
Health services	103,623	2,107	1,228	0.95	0.77
Educational services	112,018	7,593	5,827	1.25	3.38
Other professional and related services	88,557	2,629	1,763	1.09	1.29
Public administration	54,113	1,163	717	1.00	0.86
Total	1,319,920	32,984	20,306		

Source: 1990 U.S. Census, location quotients calculated by ECONorthwest.

[4] The Census employment counts do not include employees that live outside the community. Based on employment figures for the top ten employers in Corvallis, the Census figures appear to significantly underestimate manufacturing employment.

2.2 UGB AMENDMENTS AND ANNEXATIONS

Between 1990 and 1996, the City of Corvallis annexed a total of about 300 acres of land, an average of about 50 acres per year. The total land area of Corvallis inside the city limits increased from about 8,217.6 acres in 1990 to about 8,514.6 acres by the end of 1996.

2.3 RECENT DEVELOPMENT TRENDS

Table 2-6 shows that the City of Corvallis approved 2,629 residential permits between 1990 and 1996. Permit activity during this period was strongest (especially multi-family permits) in 1995 and 1996, with 1,157 approved permits. Permit activity was distributed fairly equally between single-family and multi-family permits during the six-year period.

Table 2-6. Historical residential building permits Corvallis, 1990-1996

Type	Single Family	Multi-Family	Total
1990	128	179	307
1991	120	53	173
1992	177	207	384
1993	179	51	230
1994	177	214	391
1995	167	397	564
1996	209	371	580
Total 90-96	1,157	1,472	2,629

Source: *1996 Land Development Information Report*, City of Corvallis.

Table 2-7 shows the lot sizes and number of subdivision projects for each development district during the study period. On average, the percentage of the subdivision area that was devoted to roads and rights-of-way was about 22%. The average lot size, expressed as a percentage of minimum lot size, for the developments was 125%. A comparison of actual densities with allowable indicates that development generally occurs at between 70% and 80% allowable densities.

Table 2-7. Lot Sizes of Selected Subdivisions By Development District Corvallis, 1993-96

Development District	Roads Percent of Area	Lot Size Percent of Minimum	Percent of Allowable Density	Number of Projects
RS-3.5	20.2%	120%	77%	8
RS-5	25.4%	105%	70%	3
RS-6	22.8%	140%	80%	3
RS-9	20.8%	152%	70%	4
RS-12	20.5%	77%	79%	3
RS-20[a]	N/A	N/A	N/A	3
Averages	21.5%	125%		NA

Source: City of Corvallis Planning Department, 1998

[a] Because the RS-20 zone has no maximum density, any calculations here would not be comparable to those for other zones.

Another useful indicator of development trends is the density at which development occurs. Table 2-8 shows that the subdivisions we analyzed consisted of 1,180 housing units. The average gross and net density columns are weighted averages of the project analyzed. The units/gross acre column shows the actual density that development occurred (unweighted). The average gross density for the subdivisions was 6.0 units/gross acre. Net densities eliminate lands used for public facilities and reflect land that is actually used for development (e.g., for residential development, net acres are the amount of land in lots).

Table 2-8. Densities of selected subdivisions by zoning district Corvallis, 1993-96

Development District	Number of Projects	Units	Gross Acres	Average Net Density[a] DU/Acre	Average Gross Density DU/Acre
RS-3.5	11	238	89.2	3.8	2.7
RS-5	3	54	15.5	7.2	3.5
RS-6	3	143	29.7	6.2	4.8
RS-9	4	122	19.3	8.9	6.3
RS-12	5	185	19.4	14.3	9.5
RS-20	3	438	22.5	21.8	19.4
All Developments	29	1,180	195.6	N/A	6.0

Source: City of Corvallis Planning Division, 1998

[a] Not all projects had data on public dedications. The average net density is a weighted average and reflects only those projects where data were available.

Another indicator of development trends is vacancy rates. Vacancy rates for single-family and multi-family units vary significantly during the year in Corvallis. Rates typically increase during the summer months when OSU's student population declines. The 1990 Census estimated single-family vacancy rates to be about 0.9% and multi-family rates to be about 2.7 percent. These estimates are similar to more recent estimates of about three percent citywide.

In summary, Corvallis has grown substantially during the 1990s. The City grew 14.3%, adding an estimated 6,388 new residents, between 1990 and 1997. The City approved 2,629 residential building permits between 1990 and 1996—increasing total residential units to an estimated 19,937 units within the city limit. Multifamily units accounted for about 56% of the new units between 1990 and 1996.

Chapter 3

Demand for Land

This chapter evaluates the demand for land in Corvallis during the next 20 years in three general categories: (1) residential land, (2) non-residential land (commercial and industrial), and (3) public and institutional land.

3.1 DEMAND FOR RESIDENTIAL LAND

3.1.1 POPULATION FORECASTS

The demand for residential land derives from a demand for new housing, which in turn is a function of growth in households (population). Appendix C describes in more detail various issues related to population forecasts. It concludes that:

- The population of Corvallis in 1990, according to the U.S. Census, was 44,757
- The population of Corvallis in 1996, as estimated by the Center for Population Research and Census (CPRC), was 49,275
- For the purposes of this report, the base case forecast of population for Corvallis is the one in the City's acknowledged comprehensive plan: 58,461 people in 2020. Thus, the forecasted population growth between 1996 and 2020 that needs to be accommodated by new housing units is 9,186.

3.1.2 HOUSING FORECASTS AND RESIDENTIAL LAND NEED

3.1.2.1 OVERVIEW AND PROVISIONAL FORECAST

The simple way to forecast demand or need for new housing units is to assume a simple relationship: population growth is converted to households by an assumption about persons per household, and new households are assumed to equal the number of new units needed (sometimes with small adjustments for vacancy rates, demolitions, and so on). That method is typical and meets state requirements.[1] By assuming that simple relationship, however, one implicitly makes multiple assumptions about the influence of and interaction among demographic and socioeconomic change, and prices, on future demand for housing by type.

State statutes also require that any forecast be based, as a starting point, on trends for the last five years. The purpose of the requirement is to reduce the possibility that local governments will make unrealistic assumptions about the mix and density of future housing development. This type of

[1] As described in *Planning for Residential Growth: a Workbook for Oregon's Urban Areas;* TGM, ODOT, DLCD; June 1997 (the HB 2709 Workbook).

forecast is insensitive to any expectations about changes in demographics, socioeconomics, prices, preferences, and policy.

For our analysis we first make a provisional forecast of housing demand based on a simple extrapolation of past development trends. We present that forecast in this section as a starting point for the analysis. We then look in subsequent sections at underlying causal variables in more detail (e.g., income, prices), and supplement the simple forecasting method with a more complete housing demand model.

Table 3-1 summarizes housing development in Corvallis on a broad scale, focusing on the split between single-family and multi-family development.[2] It paints a picture of a city that started out with primarily single-family units, and then shifted toward only a slight preponderance of single-family units because of a trend over the last 25 years of building more multi-family than single-family housing. The City's building permit data also allow us to calculate average densities for single- and multi-family subdivisions.

Table 3-1. Distribution of units by type, Corvallis city limits

Category	Single Family/Multi-Family split[a]
1990 Census	58%/42%
Permits 1970-96 (LDIR)	45%/55%
Permits 1990-96 (LDIR)	44%/56%
Permits 1991-96 (LDIR)	44%/56%

Source: U.S. Census, City of Corvallis Land Development Information Report
[a]Single-family units includes mobile homes.

Thus, as a starting point for our analysis, we assume that future housing construction in Corvallis, if it follows past trends, would be 50% single-family units at an average density of about 5 units per net acre, and 50% multi-family units at an average density of about 15 units per net acre. Those assumptions yield an estimate of overall density of about 7.5 units per net acre, which is consistent with past trends.

The forecasted increase in population for the planning period is 9,186 people. At a historical average household size of 2.3 people, that implies a need for approximately 4,000 housing units during the planning period, and a need for about 530 net acres of residential land.

[2] The definition of what constitutes a "single-family unit" varies. We prefer the one that makes most sense to a lay person: a unit is single family if it is the only unit in a structure. By that definition, manufactured housing and mobile homes are almost always single family, and duplexes and townhouses are multi-family units. The U.S. Census makes a technical distinction between two types of single-family units: detached (consistent with the definition we just gave) and attached. An attached single-family unit looks to the casual observer like a multi-family unit: several families appear to live in the same structure. The technical distinction is that the walls separating the units extend from ground to roof: under this definition, many duplexes and most row or townhouses would be classified as single-family units. The definitions can be further confused when people mix tenure considerations with structure type (e.g., considering a row house to be single-family if it is owned (condominium), but multi-family if it is rented).

Note that *the previous estimates are just a starting point for the analysis.* In the next section we look at other determinants of housing type and density to see what adjustments they might suggest to this provisional forecast.

3.1.2.2 DETAILS OF HOUSING DEMAND

The provisional forecast gives an aggregate estimate of the number of housing units needed to accommodate forecasted growth, and the amount of land those units will require. For a housing analysis as part of periodic review, however, the state requires local jurisdictions to provide more detail about the housing need. The relevant statutory requirements are:

> Conduct an analysis of housing need by type and density range, in accordance with ORS 197.303 and statewide planning goals and rules relating to housing, to determine the amount of land needed for each needed housing type for the next 20 years. ORS 196.296(3)(d)

Needed housing as defined in ORS 197.303 means:

> ...housing types determined to meet the need shown for housing within an urban growth boundary at particular price ranges and rent levels. Needed housing includes:
>
> - Housing that includes, but is not limited to, attached and detached single-family housing and multiple family housing for both owner and renter occupancy;
> - Government assisted housing;
> - Mobile home or manufactured dwelling parks
> - Manufactured homes on individual lots planned and zoned for single-family residential use that are in addition to lots within designated manufactured dwelling subdivisions.

Thus, this section begins with a qualitative discussion of some of the factors that will influence housing demand and, in particular, may cause it to shift in ways not captured in the model. Research we have performed for previous studies provides some insights into future housing market trends.[3] Following are key trends that will affect demand for housing and housing types in Corvallis.

Family type and life cycle affect housing choices. Families with children and older households are more likely to own housing.

- One-parent families. These households, with lower median incomes than two-parent households, have lower rates of home ownership than their two-parent counterparts. Ownership rates increase as the age of the youngest child increases, and are higher than for single people.

[3] ECONorthwest and the Leland Consulting Group conducted a detailed housing market analysis of the Eugene-Springfield area for the HB 2709 workbook.

- Older households (ages 45 to 64). These households have a strong tendency to own their own homes and to remain in their current housing unit. Although households have been shown to move motivated by the need for additional space, the same motivation has not been found for households with excess space. Many households view these years as a transitional period before retirement, and defer major housing changes until retirement. In other words, even though children have left and a smaller house would be possible, they wait to make the shift in housing until they are also making decisions about retirement.

Changing composition of households will affect demand for residential real estate.

- Growth in households with below median incomes will increase demand for low-cost rental apartments. Most of these households will occupy older units, and many may require subsidy.
- Growth in households with income around and slightly above the median should increase demand for low-to moderately-priced single-family housing.
- Most new single-family housing will be built for households with incomes well above the median: they are the only ones that can afford it. Demand for standard- and large-lot single-family housing could decrease if housing prices rise faster than incomes for a large percentage of households.
- Growth of one- and two-person households should increase demand for apartments and smaller forms of single-family housing.
- Declining share of three- and four-or more-person households could reduce the relative demand for traditional single-family housing, other things being equal. On the other hand, the long-term trends nationally and in the state have been for larger average house sizes, and more square footage per person.
- Aging households should increase the number of households making post-retirement transitions out of traditional single-family housing.
- The direction of the demographics and economics is toward reducing housing cost (in part by reducing land and built space), smaller households, and older households.

Demographic forces suggest those trends will change. The amount of demand and how it will be supplied with housing is influenced by the amount and price of buildable land, and is illustrated by trends in construction and absorption.

- In the 1980s and 1990s, there has been growing demand for large new homes on large lots.
- But the supply of buildable land is decreasing (at least temporarily) and dispersing.

- Public policies (e.g., the UGB, environmental regulation, and the cost of services) and market forces (growth pressure) will increase the cost of land and housing.
- Given these general trends as context, we now turn to local factors that will influence future demand for housing in Corvallis: income, age, household composition, housing type, and value.

As another indicator of trends in the local market we conducted interviews with local realtors and developers. The consensus from these interviews is:

- The housing market is cooling off. The rapid increase of housing prices experienced in the early 1990s is stabilizing and homes are staying on the market longer.
- Substantial unmet demand for units under $130,000 exists. Individuals we spoke with indicated that very few units are being built in this price range.
- Rental vacancy rates are increasing. This is in part due to the development of multi-family units, but may also be affected by stable or declining enrollments at OSU.
- The majority of new single-family development is units in the $200,000-$300,000 range.
- Prices for existing platted lots range from $50,000 and up. The limited supply of available lots, combined with annexation voting has affected the ability to develop lower-cost housing units.
- While demand exists for manufactured housing, high land prices provide little incentive to develop manufactured housing subdivisions.

These general trends provide context, but it is hard to apply them as they are in any quantitative way in Corvallis. Thus, we tried to see their combined effects by using a model. We adapted a single-zone version of Metro's Real Estate Location Model (RELM) to Corvallis. RELM works by equilibrating demand for residential housing units with supply through changes in price. These price changes feed back into the model, changing the quantities demanded and supplied until a balance is achieved.[4]

RELM requires a level of demographic detail that is only available from U.S. Census data,[5] which means that the forecast period must start from 1990. It makes a forecast of housing demand from 1990 to 2020, when the acknowledged population forecast projects a population of 58,461. For that period between 1990 and 2020 RELM projects 5,768 new housing units will be needed in Corvallis to accommodate a population increase of 13,704 people. That estimate implies growth that averages 2.38 persons per household, typical of urban areas of comparable size but higher than the average of 2.33 for the City as a whole in 1990.

---

[4] See Chapter 1 for a more detailed description of the RELM model.

[5] Moreover it requires cross-classifications of data that are only available at the county level.

Limitations imposed by the data required us to run our forecast with RELM from 1990. But our base year for the rest of the analysis is 1996 (specifically, June): the date all the land use data are available for. Some of the demand for new housing from 1990 to 2020 that RELM estimates has already been met, or will be met by units already permitted. We backed out the number of single- and multi-family units represented by building permits. Not all of the permits issued by 1996, however, had resulted in actual housing units to accommodate population growth. Moreover, population estimates done by CPRC in non-Census years are made, in large part, based on building permits. Thus, it is difficult to estimate the number of units on the ground in 1996. If one were to assume as an upper bound that all permits issued by 1996 resulted in houses in 1996, then adjustments to the 30-year RELM forecast yield estimates of 3,528 units to be built between July 1996 and 2020 (2,422 SF; 1,106 MF).

In our judgment, however, that estimate underestimates the units that will be built, and underestimates the demand for land. That judgment is supported by four cross-checks on the reasonableness of the model's results:

- The assessment data from the GIS data indicate that about 919 single family units were actually *built* between April 1990 (when the 1990 Census count was administered) and June 1996 (compared to 1,001 permits between 1990 and 1996). This suggests that about 92% of the permits issued resulted in units on the ground.
- The CPRC population estimates—which are based, in part, on building permits—contain inconsistencies that are difficult to resolve. For example, Corvallis, which is entirely within Benton County, is estimated to have increased population by 6338 between 1990 and 1997, while Benton County increased population during the same period by only 5889.
- The difference between the estimated population of Corvallis in June 1996 (49,275) and the forecasted population for 2020 (58,461) is 9,186. If all that new population were accommodated in new housing then the implied average number of persons per household is 2.6. The average in 1990 was 2.3, and most demographers expect average household size to remain stable or decrease slightly, not to increase.
- Vacancy rates should be factored into the overall housing need estimate and increase the overall need for housing and land. The *1996 Land Development Information Report* indicates that vacancy rates varied substantially between 1970 and 1990. The Census showed that 3.6% of single and multi-family units were vacant in 1990. Analysts typically use long-term vacancy rates of about 5% to account for these differences.

In sum, all indications are that adjustments to RELM forecasts based on building permits underestimate the amount of housing and land needed to accommodate growth.Table 3-2 presents what we judge to be a more reasonable preliminary estimate of housing and residential land demand. It accepts the output of RELM with respect to the ratio of single-family to multi-family housing and expected average densities, but calibrates the RELM results to hold persons per household roughly constant at 1990 levels.

Table 3-2. RELM results, adjusted: housing and land need by type within the Corvallis UGB, 1996-2010

Use Type	Units	% of Total Units
Single Family	2,750	69%
Multi-Family	1,250	31%
Total	4,000	100%

Source: RELM, analysis and adjustments by ECONorthwest

RELM forecasts a housing future that is substantially different from either the current situation or the recent past. In particular, it forecasts that about 69% of all future development will be single family. Compare that percentage to the ones in Table 3-1, and it is clear that RELM predicts a significant change in residential development trends. To make a more informed judgment about which future seems more likely, we turn to an examination of local factors that will influence future demand for housing in Corvallis: income, age, household composition, housing type, and value.

Table 3-3 shows growth in income between 1989 and 1997 for persons and households living within the Corvallis city limit. Depending on the measure, income has increased between 36% and 45% during this period. The fact that averages measured by means (first two rows) are increasing at a faster rate than averages measured as medians (last two rows) means that the income growth is weighted toward households with incomes above the means.

Table 3-3. Income measures, 1989, 1997[a]

Indicator	1989	1997	Percent Change
Per capita	11,815	17,213	45.7%
Average household	30,095	43,718	45.3%
Median household	23,196	31,648	36.4%
Median family	34,816	48,146	38.3%

Source: U.S. Census (1989), Claritas, Inc. (1997)

a. Not adjusted for inflation

Table 3-4 shows annual household income in 1989 and 1997 for all households inside the Corvallis UGB. All of the income categories below $35,000 lost households between 1990 and 1997, suggesting strong income growth during this period. The largest decrease was in households with annual incomes under $10,000. This finding is what one should expect given growing incomes and no adjustments for inflation.

Table 3-4. Annual household income, Corvallis UGB, 1989, 1997[a]

Income	1990		1997		1990-1997 Change	
	Number	Percent	Number	Percent	Number	Percent
Under $10,000	4,118	24.6%	3,009	16.8%	-1,109	-26.9%
$10,000-$20,000	3,331	19.9%	3,075	17.2%	-256	-6.2%
$24,000-$24,999	1,344	8.0%	1,285	7.2%	-59	-1.4%
$25,000-$29,999	1,177	7.0%	1,157	6.5%	-20	-0.5%
$30,000-$34,999	1,274	7.6%	1,053	5.9%	-221	-5.4%
$35,000-$49,999	2,432	14.5%	2,668	14.9%	236	5.7%
$50,000-$74,999	1,981	11.8%	2,922	16.3%	941	22.9%
$75,000-$99,999	658	3.9%	1,355	7.6%	697	16.9%
$100,000-$149,999	352	2.1%	1,079	6.0%	727	17.7%
$150,000 and over	76	0.5%	322	1.8%	246	6.0%
Total	16,743	100.0%	17,925	100.0%	1,182	28.7%

Source: U.S. Census (1989), Claritas, Inc. (1997)

a. Not adjusted for inflation

Household size is a key variable in estimating housing need. Household size nationally has steadily decreased over recent decades due to changes in household type. The average household size in 1990 for Corvallis was 2.30 persons in the city limit and 2.33 persons for the entire UGB. Data from Claritas, Inc. shows average household size in 1997 was 2.31 persons in the city limit and 2.35 persons in the entire UGB. Since Corvallis already has a smaller household size than the state average, the Claritas five-year forecast that household size will remain constant between 1997 and 2002 is not unreasonable.

Table 3-5 shows households by type for the city limit, urban fringe, and entire UGB. Corvallis has a significantly different distribution of households by type than the state. The city has far fewer single-person households than the state and far more non-family households. The large percentage of non-family households can be explained by the presence of OSU, and perhaps by doubling-up of younger (20-35 year old) workers in low- and moderate-paying service and professional jobs. Based on regional employment projections and conversations with OSU officials, we anticipate that non-family households will increase at a rate lower than other household types over the planning period.

Table 3-5. Households by type, Corvallis, 1990

Household type	City limit		Urban Fringe		Oregon	
	Number	Percent	Number	Percent	Number	Percent
Male, no wife, no child	173	1.0%	4	0.4%	116,232	10.5%
Female, no husband, no child	401	2.4%	20	2.0%	162,484	14.7%
Married couple family	7,594	45.1%	730	74.3%	613,297	55.5%
Other family household with child	1,009	6.0%	46	4.7%	139,596	12.6%
Non-family	7,646	45.4%	182	18.5%	73,753	6.7%
Total	16,823	100.0%	982	100.0%	1,105,362	100.0%

Source: Claritas, Inc.

Table 3-6 shows persons by age in 1990 and 1997 for the area inside the Corvallis city limit. The data indicate the Corvallis population aged significantly during the period. Persons aged 35-54 increased nearly one-third in number between 1990 and 1997. County-level projections from PSU indicate the Benton County population will continue to age.

Table 3-6. Persons by age, Corvallis city limits, 1990 and 1997

Age	1990		1997		1990-1997 Change		
	Number	Percent of Total	Number	Percent of Total	Number	Percent Difference 90-97	Percent of Total
Under 20	12,171	27.2%	12,530	26.6%	359	-0.6%	2.9%
20-34	17,009	38.0%	15,430	32.8%	-1,579	-5.2%	-9.3%
35-54	9,063	20.2%	12,035	25.6%	2,972	5.4%	32.8%
55-64	2,300	5.1%	2,563	5.4%	263	0.3%	11.4%
65 and over	4,214	9.4%	4,485	9.5%	271	0.7%	6.4%
Total	44,757	100.0%	47,043	100.0%	2,286	–	5.1%
Median Age	26.3	–	29.2	–	2.9	–	11.0%

Source: U.S. Census (1990), Claritas, Inc. (1997)

Table 3-7 shows estimated housing units by type in 1996. The U.S. Census shows Corvallis had 17,307 dwelling units within the city limit in 1990. Since 1990, 2,240 building permits were issued within the city limit. Using data from Claritas, Inc., we estimated the number of dwelling units in the urban fringe. The Claritas data estimated 1,118 dwelling units were in the urban fringe in 1990. County building permit data show that only 58 residential permits were issued in the urban fringe (the area outside the city limits and inside the UGB) between 1990 and 1996. Thus, we estimate that only 5.7% of all houses in the Corvallis UGB are in the urban fringe (outside city limits) and that only about 2.5% of all development between 1990 and 1996 occurred within the urban fringe. Given policies that govern development in the urban fringe and annexation, we expect this trend to continue: a decreasing share of housing will exist between the city limits and the UGB.

Table 3-7. Estimated housing units by type for the Corvallis city limit, 1996

Housing type	Dwelling Units (1990)	Residential Permits Issued (1990- 1996)	Units + Permits (June 1996)
Single Family	9,313	1,001	10,314
Multi Family	7,241	1,239	8,480
Mobile Home/Trailer/Other[a]	753	N/A	753
Subtotal	17,307	2,240	19,547

Source: Claritas, Inc., City of Corvallis *Land Development Information Report.*
[a] The LDIR does not include mobile home, trailer and other types of permits

Table 3-8 shows single-family residential units by value in 1996. While assessment values do not represent true market value of real property, the data provide a relative comparison of the distribution of housing units by value in 1996. Based on assessment data, the average value was $148,724, while the median value was $137,080. According to the 1990 Census, the median value of single-family owner-occupied housing units was $71,010. Although the data are not directly comparable, they are consistent with anyone's casual observation: housing values increased sharply between 1990 and 1996 (between 75% and 100% in nominal terms); and, more importantly, housing costs have probably increased at a greater rate than income.

Table 3-8. Single family residential units by assessed value, 1996

Value	Number of Units	Percent of Units
<$50,000	132	1.2%
$50,000-$74,999	377	3.4%
$75,000-$99,999	1,268	11.3%
$100,000-$124,999	2,689	23.9%
$125,000-$149,999	2,275	20.2%
$150,000-$174,999	1,756	15.6%
$175,000-$199,999	1,107	9.8%
$200,000-$224,999	643	5.7%
$225,000-$249,999	395	3.5%
$250,000-$299,999	399	3.5%
$300,000-$399,999	169	1.5%
$400,000-$499,999	17	0.2%
$500,000 and Over	18	0.2%
Total	11,245	100.0%
Average Value	$148,724	
Median Value	$137,080	

Source: Benton County Assessment Data, 1996

RELM produces estimates of changes in the number of units by price category. Tables 3-9 and 3-10 shows the percentage of new units by type (single-family or multi-family) expected in each price category (1995 dollars: i.e., real dollars, with constant purchasing power, adjusted for expected inflation). There are no under-$50,000 single-family units in either the 1990 or 2020 models. The model implicitly predicts that the loss of units in the $50,000 to $74,999 price class will be offset by increases in more expensive units before 2020.

Table 3-9. Change in number of single-family units by price, 1990-2020

Value	Percent Change
Less than $50,000	0%
$50,000-$74,999	-2%
$75,000-$99,999	3%
$100,000-$119,999	5%
$120,000-$149,999	30%
$150,000-$174,999	23%
$175,000-$199,999	13%
$200,000 and up	27%

Source: RELM model, analysis by ECONorthwest

Table 3-10 Change in multi-family units by price, 1990-2020

Value	Percent Change
Less than $200	0%
$200-$299	0%
$300-$399	16%
$400-$499	3%
$500-$599	21%
$600-$749	36%
$750-$999	8%
$1,000 and up	15%

Source: RELM model, analysis by ECONorthwest

To get a feeling for the implications of these numbers, one must estimate what typical households can afford to pay (the sample calculations are shown in the sidebar). Typical assumptions are that households can afford to pay 30% of their gross (pre-tax) income on housing related expenses (which, depending on the agency and purpose, may or may not include utilities, taxes, insurance, and maintenance costs). To keep things simple, assume

Rough estimate of housing affordability	
Annual Household income:	$40,000
30% of Annual HH income:	$12,000
Minus other costs (@$250/mo):	$3,000
Annual mortgage payment:	$9,000
Monthly mortgage payment:	$750
Total mortgage value (@8.5% and 30 years):	$98,000
Total affordable housing value (with 20% down payment):	$122,000

that households can, on average, pay 30% to cover mortgage payments and other costs, and that other costs are about $250 per month ($3,000/year). Thus, a household with a $40,000 income could handle $9,000 in annual mortgage costs, or payments of about $750 per month. Those payments would support a mortgage of almost $98,000 (at 8.5% for 30 years), which in turn supports a purchase price (assuming a 20% down-payment) of about $122,000. At a household income of $30,000, the value of a house that could be purchased drops to about $81,000.

Median household income in Corvallis is estimated to be just over $30,000 per year. The smallest new, stick-built house on the market today cannot be built for $80,000. Thus, more than half of the households in Corvallis cannot afford a new house of any size. When one shifts from looking at "households" to "families" the story is different. The median family income is about $48,000, which allows the purchase of a home in the range of $150,000, which is in the middle of the range that RELM predicts will grow substantially.

One way to interpret these data is that non-family households will be looking primarily at older housing and rentals, whereas traditional families will be the predominant buyers of new single-family homes. That conclusion is consistent with casual observation.

Another inference is that if the households that cannot afford new stick-built housing want to get ownership, then there are three primary options:

- Manufactured housing, which can produced single-family, detached dwelling units at substantially lower cost.
- Attached dwellings for ownership (row and townhouses, as condominiums), at a substantial decrease in interior and exterior space, since the units typically cost more to build per square foot.
- Older housing. Despite criticisms of the inequity or even immorality of "trickle down" housing for the low income, that system does more to house lower-income households than any government program for housing assistance.

3.1.2.3 CONCLUSIONS

The picture that emerges from some of the data presented above is one that contrasts with the future painted by RELM. RELM looks at demographic characteristics for Benton County (the only level at which the necessary cross-tabulations are available) and at forecasts of increasing incomes, and

predicts a shift toward single-family housing (about two new single-family units for every multi-family unit). In contrast, the City's housing construction since 1970 has been more evenly split between single- and multi-family units. The aging of the population and increases in real housing costs support continuation of these trends.

There is no way to determine quantitatively which future is likely to occur. One has to make a judgment about the assumptions that seem most reasonable.

On the one hand, RELM moves in the right direction in terms of where the market will want to go in the absence of changes in public policy. The amount of multi-family that Corvallis has is exceptional for cities of its size and is attributable in part to the presence of OSU. But OSU does not expect much growth in students or employment over the next 20 years.

Moreover, the last 10-15 years of multi-family unit development was certainly spurred by increases in the high-technology sector of industry, which tends to cause disproportionate increases in young, mobile households that are more likely to seek apartments for housing. Those same households are aging, marrying, having children, and increasing their incomes—all of those factors increase the propensity to seek single-family housing and the ability to buy it.

On the other hand, the predicted shift is a substantial diversion from current conditions, recent trends, and some aspects of City policy.

Thus, our forecast is for something in between. We believe an estimate of up to 60% single-family construction is justifiable, which is close to the 58% single-family percentage of total housing stock in 1990. But state planning guidelines are clear that the burden is on local governments to justify predictions of substantial differences between recent trends and forecasting assumptions. Thus, from a policy perspective, it will be easier for the City in the subsequent review of its plan amendments by DLCD if it has assumed a split closer to recent trends, and then tested the sensitivity of land demand to different assumptions. For the base case of our analysis we therefore assume 50% of future development will be single-family.

But state planning guidelines require a more detailed forecast of housing type, and residential land need estimates must be tied to land allocations. The City of Corvallis has four plan designations for residential use:

- Low density–2-6 units per acre
- Medium density–6-12 units per acre
- Medium-high density–12-20 units per acre
- High density–20 or more units per acre

To allocate housing units to specific plan designations, we considered historic development by plan designation, land supply, and the market and demographic trends reviewed earlier in this chapter. Based on those data, we allocated 40% of all housing to single-family detached units, and 75% of that

amount (i.e., 30% of total units) to the low-density plan designation. The remaining 25% is allocated to the medium-density designation. We assumed 10% of the total housing stock would be manufactured homes, split even between low- and medium-density residential zones. For multi-family residential (which we assumed to constitute 50% of total new housing), we allocated 80% to the medium- and medium-high density designation and 20% to the high-density designation. Table 3-11 shows the percentage allocations of housing types to the City's residential plan designations. Table 3-12 shows the estimates of demand for housing units and land that these assumptions lead to.

Table 3-11. Allocation of housing units by plan designation, 1996-2020

Housing type	Plan Designation				Total
	Low Density	Medium Density	Medium -High Density	High Density	
Single-family					[50%]
Detached	30%	10%			**40%**
Manufactured	5%	5%			**10%**
Multi-family					**[50%]**
Row/townhouse		5%			**5%**
Duplex		5%	5%		**10%**
Apartment			25%	10%	**35%**
Total	**35%**	**25%**	**30%**	**10%**	**100%**

Source: ECONorthwest, 1998.

Table 3-12. Refined estimate of housing and land need by type within the Corvallis UGB, 1996-2020

Housing Type/ Plan Designation	Units	Expected Density DU/Net Acre	Net Acres	Net to Gross Assumption	Expected Density DU/Gross Acre	Gross Acres
Single Family						
Low Density	1,400	4.2	337	77%	3.2	438
Medium Density	600	8.2	73	77%	6.3	95
Subtotal	2,000	4.9	410	77%	3.8	533
Multi-Family						
Medium Density	400	8.2	49	80%	6.3	61
Medium-High Density	1,200	11.9	101	80%	9.5	126
High Density	400	24.4	16	80%	19.5	21
Subtotal	2,000	12.0	166	80%	9.6	208
Total	4,000	7.0	576	77%	5.4	741

Source: ECONorthwest, 1998.

Chapter 5 discusses the implications of this forecast for City policy (especially for the issue of whether more land is needed in the UGB), and how reasonable variations in the assumptions affect final conclusions and policy recommendations.

3.2 DEMAND FOR NON-RESIDENTIAL LAND

The demand for non-residential land in the Corvallis UGB is a function of future employment, the density of employment, and the specific type of employment on a given parcel. This section evaluates these variables and presents an estimate of demand for industrial land between 1996 and 2020.

3.2.1 EMPLOYMENT

Employment growth is the usual variable used to drive estimates of the demand for commercial and industrial built space, and hence for the demand for commercial and industrial land. Appendix C describes in more detail various issues related to employment forecasts. It concludes that:

- The number of employees in Corvallis in 1996 is estimated to have been 30,558
- The number of employees in Corvallis in 2020 will be 38,853. Between 1996 and 2020 the City will have to accommodate over 8,000 new employees
- The great majority of that growth is in government, trade, and services (see Appendix C for details).

3.2.2 COMMERCIAL AND INDUSTRIAL LAND NEED

We used employee-per-acre ratios to estimate demand for non-residential land. The general approach begins with sector-level employment estimates. Employment added during the analysis period is then divided by employee-per-acre ratios to yield net land need in acres by sector. The final step is to allocate office and non-office based employment by sector and to aggregate up to generalized land use types.

Because detailed employment data have not been previously compiled by government agencies for Corvallis, we used information from the Eugene-Springfield metro area (1993 and 1994) to estimate employee-per-acre (EPA) ratios. The first set of figures (ECONW estimate) are EPA ratios we developed using actual employment and land areas.[6] The second set of figures are the EPA ratios LCOG used in the 1993 *Buildable Lands Inventory* for Eugene-Springfield.

As Table 3-13 shows, the EPA ratios we calculated vary substantially by sector, while the LCOG estimates were relatively constant. Manufacturing sectors tend to have lower EPAs than office-based sectors. Because we did not remove the vacant portions of partially-developed parcels and land in other non-employment based uses from the database, our EPA estimates are lower than LCOG's, which tend to look at theoretical maximums under the assumption of efficient use of land and building space.

Moreover, our evaluation of 1994 employment and parcel data indicate significant variation occurs within individual sectors. This is due, in part, to inefficiencies of land uses, and the fact that some employment occurs on parcels that are only partially used for that employment. Our analysis of the Eugene-Springfield data led to several other conclusions:

- Employment is not always consistent with plan designation. For example, commercial uses occurring on land designated for industrial uses.
- Some employment sectors provide difficulties in developing EPA ratios. For example, many construction-related businesses are based out of residences.
- Most businesses have some level of office-based employment associated with them. LCOG accounted for this in the Eugene-Springfield *Industrial Lands Inventory* by allocating a percentage of employment for each sector to office, and using different EPAs for office use.

[6] Appendix C contains a more detailed description of the EPA ratios.

Table 3-13. Floor area and employee per acre ratios in the Eugene/Springfield area, 1994

Division Title	ECONW Estimates	LCOG Estimates
Agriculture, Forestry, and Fishing	5.1	N/A
Mining	5.9	35
Construction	6.4	35
Manufacturing	12.6	25
Transportation, communications, and utilities	6.8	25
Wholesale trade	8.2	25
Retail trade	21.2	25
Finance, insurance, and real estate	22.4	44
Services	14.5	25
Public Administration	12.1	25

Source: LCOG, ECONorthwest.

Table 3-14 uses employment forecasts by sector (Appendix C) and the EPA ratios in Table 3-13 to estimate non-residential land need for the Corvallis UGB between 1996 and 2020. To account for variations in employment densities, we used the LCOG estimates as a upper bound for each sector and rounded our EPAs up to the next higher increment of 5 for each sector. The analysis shows a net non-residential land need of 429 acres and a gross land need (assuming net land is 75% of gross land) of 536 acres.

The output of the EPA ratio analysis is net and gross land need by sector. Generalized plan designations for non-residential use include heavy industrial (the City classifications of General and Intensive), light industrial, commercial, and office. To allocate that land need to specific plan designations, we made the following assumptions about which plan designations employment would be most likely to locate in:

- Heavy industry–includes lumber and wood products; food products; mining; agriculture, forestry, and fishing; other durable manufacturing; and other non-durable goods
- Light industrial—includes machine and electrical equipment; construction; transportation, communication and utilities; and wholesale trade
- Commercial—includes retail trade
- Office—includes finance, insurance, real estate; and services

Although government employment is included in the land need estimate shown in Table 3-14, we assume all governmental employment will be absorbed on public land as shown in Table 3-15.

Table 3-14. Commercial and industrial land need by sector 1996-2020

Sector	EPA	Employment 1996.	Employment 2020	Employment 1996-2016 New	Land Needs (Acres) 1996-2020 Net	Land Needs (Acres) 1996-2020 Gross
Manufacturing		7,639	8,789	1,149	64	80
Lumber & Wood	10	611	641	30	3	4
Mach & Electric Equip	20	6,325	7,130	804	40	50
Other Durable	15	214	344	130	9	11
Food Products	30	92	106	14	0	1
Other Non-Durable	15	397	568	171	11	14
Non-Manufacturing		22,918	30,064	7,146	365	456
Ag, Forestry, Fishing	5	458	517	58	12	15
Mining	10	-	-	-	-	-
Construction	20	703	958	255	13	16
TC&U	10	642	815	173	17	22
Trade		4,584	6,221	1,637	76	95
Wholesale Trade	10	397	555	157	16	20
Retail Trade	25	4,156	5,666	1,510	60	76
Finance, Insurance, Real Estate	25	947	1,354	407	16	20
Services	20	6,417	9,617	3,200	160	200
Government	20	9,167	10,583	1,415	71	88
Total Wage and Salary Employment		**30,558**	**38,853**	**8,295**	**429**	**536**

Source: Data compiled from OEA employment forecasts (1997) and Oregon Employment Department employment by sector (1997). Analysis by ECONorthwest 1998.

Chapter 5 discusses the implications of this forecast for City policy (especially for the issue of whether more land is needed in the UGB), and how reasonable variations in the assumptions affect final conclusions and policy recommendations.

3.2.3 PUBLIC/INSTITUTIONAL LAND NEED

Public facilities such as schools, hospitals, governments, churches, parks, and other non-profit organizations will expand as population increases. Many communities have specific standards for parks. School districts typically develop population projections to forecast attendance and need for additional facilities.

New growth will cause demand for parks on lands not now owned by the City. The City estimates that it currently has about 20 acres of parkland per 1000 people. In the May 1991 Land Acquisition Strategy report, Corvallis specifies 35 acres of parkland for every 1,000 residents. Preliminary estimates are that there are 115 acres of vacant land designated as parkland. Given that the City does not currently meet the standards it is imposing on new development, we will assume that any vacant land the City owns for

parks and open space is meeting existing needs, and that for every 1000 new people the City will acquire (either directly via purchases (funded by, for example, SDCs) or by developer contributions of land) 35 acres of parkland.

Table 3-15 shows public and institutional per capita ratios and land need. The per capita ratios were developed by analyzing tax exempt properties from the Benton County Assessor's database. Some ratios are relatively high ranging from 36.3 acres per 1,000 persons for city land (including parks) and 19.7 acres per 1,000 persons for OSU. The land needs are based on the acknowledged 2020 population projection for Corvallis of 58,461.

Table 3-15 also estimates acres needed for public and institutional use between 1996 and 2020. Based on conversations with OSU officials, we assume OSU will need no additional land during the planning period. The analysis shows the city will need 525.4 acres for public and institutional uses between 1996 and 2020. Over 63% of the land need will be for city uses; the majority of which will be needed for parks. Based on the standard of 35 acres of parkland per 1,000 population, the city will need 321.5 acres for parks between 1996 and 2020.

Table 3-15. Corvallis public and institutional land uses and per capita ratios, 1996

Use	Acres per 1000 People (1996)	Acres Needed 1996-2020
Religious, Service, Fraternal		
Service	0.9	8.3
Church	2.3	21.1
Education		
OSU	19.7	0.0
School	5.3	48.7
Government		
City	36.3	333.5
County	1.2	11.0
State	9.9	90.9
Federal	0.3	2.8
Other	1.0	9.2
Total	**77.0**	**525.4**

Source: Benton County Assessors Data, City of Corvallis population projection, analysis by ECONorthwest

3.3 SUMMARY OF TOTAL LAND NEED

Table 3-16 summarizes the estimates of land needs. Under our base case assumptions, Corvallis has an estimated net land need of 1,460 acres between 1996 and 2020. This translates to an estimated gross land need of

1,845 acres. This need is fairly evenly distributed between residential land, non-residential land, and public/institutional land.

Table 3-16. Summary of estimated land need, Corvallis UGB, 1996-2020

Use Type	Net Acres	Gross Acres
Residential		
Single Family		
Low Density	337	438
Medium Density	73	95
Subtotal	410	533
Multi-Family		
Medium Density	49	61
Medium-High Density	101	126
High Density	16	21
Subtotal	166	208
Residential Total	576	741
Non-residential		
Heavy Industrial	35	44
Light Industrial	86	108
Commercial	60	76
Office	176	220
Subtotal	358	447
Public and Institutional		
Public	438	548
Institutional	87	109
Subtotal	525	657
Total	1,460	1,845

Source: ECONorthwest, 1998.

[a]Includes "General" and "Intensive" industrial designations

Chapter 4 estimates the amount of land available to supply this estimated need; Chapter 5 compares the need to the supply and discusses implications for City policy.

Chapter 4

Supply of Land

This chapter presents the results of inventory of the supply of vacant, buildable land within the Corvallis Urban Growth Boundary (UGB).[1] Appendix B contains a detailed explanation of the methods and assumptions.

Many ways exist to present the land supply data: for example, by development status, plan designation, zoning, or current use. This chapter uses the categorizations most relevant to policy making: vacant land by plan designation (i.e., future use classification), vacant land by parcel size, and land with redevelopment potential. Appendix E contains many additional tables that present the data in different ways.

4.1 VACANT LAND BY PLAN DESIGNATION

Tables 4-1, 4-2, and 4-3 shows vacant land by plan designation for 1996 for the entire Corvallis UGB, and for two subareas that compose it: the area within the city limits, and the urban fringe (defined for this study as the area between the city limits and the UGB). Parcels shown in the tables are those identified as either fully vacant or partially vacant. Fully vacant means that a parcel has no significant improvements; partially vacant means that despite some improvements a parcel is judged large enough to have a buildable portion.[2] The tables classify land area in the following categories:

- Total—all land within parcels that are either fully vacant or partially vacant
- Unavailable for development—land that is developed or unavailable for development (i.e., parks, open space, public lands, permanent agriculture (OSU), etc.)
- Gross available for development—total land minus land unavailable for development
- Constrained—land that has wetland, riparian area, or is above 560 feet in elevation (4th level water service constraint)
- Net available for development—gross land available for development minus constrained land

The analysis estimates that Corvallis had 6,710.8 net acres available for development in 1996 (Table 4-1). Of this, 2,311.2 net acres were available within the city limit (Table 4-2) and 4,399.3 net acres were in the urban fringe (Table 4-3).

---

[1] The base date for the inventory was July, 1996.

[2] See Appendix A, Glossary, and Appendix B, Methods.

Table 4-1. Vacant land by plan designation inside the Corvallis UGB in 1996

Plan Designation	Number of Parcels	Acres				
		Total	Unavail. for Dev.	Gross Avail. for Dev.	Con-strained	Net Avail. for Dev.
Agriculture	7	1,133.1	957.4	175.7[a]	2.0	173.7
Conservation	140	1,103.6	1,103.6	0.0	0.0	0.0
Ag/OS Total	**147**	**2,236.7**	**2,061.0**	**175.7**	**2.0**	**173.7**
Central Business	475	102.1	97.9	4.2	0.9	3.2
Linear Commercial	255	193.4	143.9	49.6	8.3	41.3
Professional Administrative Office	127	56.5	17.7	38.8	6.6	32.2
Shopping Area	122	118.1	52.5	65.6	1.5	64.0
Comm/Office Total	**979**	**470.1**	**312.0**	**158.1**	**17.4**	**140.8**
General Industrial	176	1,477.5	365.5	1,112.0	142.8	969.2
Intensive Industrial	36	256.9	76.0	181.0	49.5	131.4
Limited Industrial	46	56.2	13.0	43.2	7.0	36.3
Research-Technology Center	36	89.4	36.7	52.7	7.3	45.4
Industrial Total	**294**	**1,880.0**	**491.2**	**1,388.8**	**206.6**	**1,182.3**
Intensive Development Sector	59	629.9	34.9	595.1	130.5	464.5
Mixed Use Total	**59**	**629.9**	**34.9**	**595.1**	**130.5**	**464.5**
Public-Institutional	135	2,278.8	2,183.2	95.6	1.3	94.3
Pub/Inst Total	**135**	**2,278.8**	**2,183.2**	**95.6**	**1.3**	**94.3**
Low Density Residential	9,109	6,933.3	2,445.0	4,488.3	612.4	3,876.0
Medium Density Residential	2,272	1,173.8	376.8	797.0	124.5	672.5
Med-High Density Residential	796	365.9	247.0	118.9	19.4	99.5
High Density Residential	579	219.3	209.6	9.7	2.4	7.3
Residential Total	**12,756**	**8,692.3**	**3,278.4**	**5,413.9**	**758.6**	**4,655.2**
No Data	1	66.0	66.0	0.0	0.0	0.0
No Data Total	**1**	**66.0**	**66.0**	**0.0**	**0.0**	**0.0**
Total	**14,371**	**16,253.8**	**8,426.7**	**7,827.2**	**1,116.4**	**6,710.8**

Source: LCOG/ECONorthwest, from City of Corvallis GIS & Benton County Assessor

[a]Six of the seven parcels designated for Agriculture inside the UGB are owned by OSU and assumed to be unavailable for development. The assessor's data had no information about ownership of the seventh parcel, which totals 175.7 acres. The agricultural designation only allows development of one unit per parcel. If this designation is retained through the planning period, this parcel would not have any significant development potential. For this analysis we treat it as buildable (assuming that it will convert to urban uses during the planning period).

Table 4-2. Vacant land by plan designation inside the Corvallis city limits in 1996

Plan Designation	Number of Parcels	Acres				
		Total	Unavail. for Dev.	Gross Avail. for Dev.	Con-strained	Net Avail. for Dev.
Conservation	12	17.5	17.5	0.0	0.0	0.0
Ag/OS Total	**12**	**17.5**	**17.5**	**0.0**	**0.0**	**0.0**
Central Business	15	6.1	1.9	4.2	0.9	3.2
Linear Commercial	82	97.1	47.7	49.4	8.1	41.3
Professional Administrative Office	35	44.6	5.8	38.8	6.6	32.2
Shopping Area	29	76.0	10.4	65.6	1.5	64.0
Comm/Office Total	**161**	**223.7**	**65.8**	**157.9**	**17.2**	**140.8**
General Industrial	61	718.7	171.4	547.3	67.1	480.2
Intensive Industrial	3	15.3	8.7	6.6	0.0	6.6
Limited Industrial	22	45.3	2.1	43.2	7.0	36.3
Research-Technology Center	25	76.5	23.8	52.7	7.3	45.4
Industrial Total	**111**	**855.9**	**206.1**	**649.8**	**81.4**	**568.4**
Public-Institutional	15	76.8	3.5	73.3	1.3	72.0
Pub/Inst Total	**15**	**76.8**	**3.5**	**73.3**	**1.3**	**72.0**
Low Density Residential	1,027	1,132.2	121.6	1,010.6	109.9	900.8
Medium Density Residential	222	697.5	21.8	675.7	97.1	578.6
Med-High Density Residential	66	60.4	6.2	54.2	10.9	43.3
High Density Residential	16	12.2	2.5	9.7	2.4	7.3
Residential Total	**1,331**	**1,902.4**	**152.1**	**1,750.3**	**220.3**	**1,530.0**
Total	**1,630**	**3,076.3**	**445.0**	**2,631.3**	**320.2**	**2,311.2**

Source: LCOG/ECONorthwest, from City of Corvallis GIS & Benton County Assessor

Table 4-3. Vacant land by plan designation within the Corvallis urban fringe in 1996

Plan Designation	Number of Parcels	Acres				
		Total	Unavail. for Dev.	Gross Avail. for Dev.	Con-strained	Net Avail. for Dev.
Agriculture	1	175.7	0.0	175.7[a]	2.0	173.7
Conservation	48	306.5	306.5	0.0	0.0	0.0
Ag/OS Total	**49**	**482.2**	**306.5**	**175.7**	**2.0**	**173.7**
General Industrial	29	574.7	10.0	564.7	75.7	489.0
Intensive Industrial	19	228.1	53.8	174.4	49.5	124.8
Industrial Total	**48**	**802.8**	**63.8**	**739.0**	**125.2**	**613.9**
Intensive Development Sector	45	613.1	18.0	595.1	130.5	464.5
Mixed Use Total	**45**	**613.1**	**18.0**	**595.1**	**130.5**	**464.5**
Public-Institutional	2	22.3	0.0	22.3	0.0	22.3
Pub/Inst Total	**2**	**22.3**	0.0	**22.3**	**0.0**	**22.3**
Low Density Residential	508	3,630.0	166.7	3,463.4	488.5	2,974.9
Medium Density Residential	12	124.8	4.0	120.8	26.9	93.9
Med-High Density Residential	6	66.1	1.5	64.6	8.5	56.2
Residential Total	**526**	**3,821.0**	**172.2**	**3,648.8**	**523.9**	**3,124.9**
No Data	1	66.0	66.0	0.0	0.0	0.0
No Data Total	**1**	**66.0**	**66.0**	0.0	0.0	0.0
Total	**671**	**5,807.4**	**626.5**	**5,180.9**	**781.6**	**4,399.3**

Source: LCOG/ECONorthwest, from City of Corvallis GIS & Benton County Assessor

[a]Six of the seven parcels designated for Agriculture inside the UGB are owned by OSU and assumed to be unavailable for development. The assessor's data had no information about ownership of the seventh parcel, which totals 175.7 acres. The agricultural designation only allows development of one unit per parcel. If this designation is retained through the planning period, this parcel would not have any significant development potential. For this analysis we treat it as buildable (assuming that it will convert to urban uses during the planning period).

4.2 VACANT LAND BY PARCEL SIZE

Parcel size and location are important factors in providing a balanced land supply. Table 4-4 shows net vacant land by plan designation and parcel size within the Corvallis UGB. The first column of the table shows plan designation. The following three columns show total net vacant acres, net vacant acres on fully vacant parcels and net vacant acres on partially developed. The final five columns show the number of parcels. The first numbers represents the number of fully vacant parcels; the second, the number of partially vacant parcels.

Consolidated ownership of land can affect the availability of land for development. To assess whether consolidated ownership could impact the

Table 4-4. Vacant parcels by size class inside the Corvallis UGB in 1996

Plan Designation	Acres			Number of Fully Vacant/Partially Vacant Parcels (FV/PV)						
	Total	Fully Vacant	Partially Vacant	Total Parcels (FV/PV)	<1 Acre (FV/PV)	1-4 Acres (FV/PV)	5-9 Acres (FV/PV)	10-19 Acres (FV/PV)	20-49 Acres (FV/PV)	50 or More Acres (FV/PV)
Agriculture	173.7	173.7	0.0	1/0	0/0	0/0	0/0	0/0	0/0	1/0
Conservation	242.0	124.5	117.5	34/26	11/3	14/15	5/4	3/3	1/1	0/0
Ag/OS Total	415.7	298.2	117.5	35/26	11/3	14/15	5/4	3/3	1/1	1/0
Central Business	3.3	2.0	1.3	11/4	11/3	0/1	0/0	0/0	0/0	0/0
Linear Commercial	41.2	14.2	27.0	22/60	17/32	4/28	1/0	0/0	0/0	0/0
Professional Administrative Office	32.2	15.8	16.4	24/11	18/7	6/2	0/2	0/0	0/0	0/0
Shopping Area	64.0	33.8	30.2	15/14	6/4	8/8	1/1	0/1	0/0	0/0
Comm/Office Total	140.8	65.8	75.0	72/89	52/46	18/39	2/3	0/1	0/0	0/0
General Industrial	969.2	410.0	559.2	32/58	10/13	11/29	2/6	3/2	2/4	4/4
Intensive Industrial	131.4	100.9	30.5	5/17	0/1	2/9	0/4	0/3	1/0	2/0
Limited Industrial	36.3	30.1	6.2	13/9	8/6	3/3	1/0	1/0	0/0	0/0
Research-Technology Center	45.4	28.7	16.7	17/8	10/1	5/4	2/2	0/1	0/0	0/0
Industrial Total	1,182.2	569.6	612.6	67/92	28/21	21/45	5/12	4/6	3/4	6/4
Intensive Development Sector	464.5	142.6	321.9	9/36	2/0	2/27	2/2	1/1	1/3	1/3
Mixed Use Total	464.5	142.6	321.9	9/36	2/0	2/27	2/2	1/1	1/3	1/3
Public-Institutional	94.3	55.0	39.3	10/7	3/3	3/2	1/1	2/0	1/1	0/0
Pub/Inst Total	94.3	55.0	39.3	10/7	3/3	3/2	1/1	2/0	1/1	0/0
Low Density Residential	3,875.7	1,947.4	1,928.3	614/921	440/492	98/349	34/46	11/11	21/17	10/6
Medium Density Residential	672.5	241.9	430.6	132/102	117/60	10/34	0/2	0/1	4/4	1/1
Med-High Density Residential	99.5	67.2	32.3	41/31	32/25	5/5	2/0	1/0	1/1	0/0
High Density Residential	7.3	2.9	4.4	9/7	8/5	1/2	0/0	0/0	0/0	0/0
Residential Total	4,655.0	2,259.4	2,395.6	796/1061	597/582	114/390	36/48	12/12	26/22	11/7
Total	6,952.4	3,390.5	3,561.9	989/1312	693/655	172/518	51/70	22/23	32/31	19/15

Source: LCOG/ECONorthwest, from City of Corvallis GIS & Benton County Assessor

long-term availability of land, we looked for owners that had three or more parcels more than 10 acres in size. About 160 parcels met these criteria.[3]

Analysis of individual ownership does not suggest that a handful of owners control the supply of vacant, buildable land. Note that for the purpose of this analysis, ownerships with similar assessor listings were considered, but some owners may have their property listed under multiple names. For vacant, unconstrained commercial land inside the city limits, two owners (out of 121) had 10 commercially-designated parcels (out of 161) totaling about 26 vacant, unconstrained acres (out of 141). For vacant, unconstrained industrial land inside the city limits, three owners (out of 77) had 15 industrially-designated parcels (out of 111) totaling about 102 vacant, unconstrained acres (out of 568). For vacant, unconstrained residential land inside the city limits, six owners (out of 1,027) had 63 residentially-designated parcels (out of 1,331) totaling about 490 vacant, unconstrained acres (out of 1,530). For vacant, unconstrained residential land inside the UGB, 19 owners (out of 1,416) had 119 residentially-designated parcels (out of 1,857) totaling about 1,378 vacant, unconstrained acres (out of 4,655).[4]

Our analysis is approximate. It does not get to the details of vacant, buildable parcels *with services immediately available*, which some brokers we interviewed believe is owned primarily by only a few landowners.

4.3 REDEVELOPMENT POTENTIAL

Redevelopment potential deals primarily with parcels with developed structures that are judged as likely to be demolished and new buildings constructed in their place. Parcels with redevelopable potential include commercial, multi-family residential (District Designation RS-12 or RS-20), or industrial parcels. Not all, or even a majority of parcels that meet these criteria for redevelopment *potential* will be assumed to redevelop during the planning period. The issue of *how much* land might redevelop over the planning period is discussed in the next chapter.

Table 4-5 shows a summary of developed parcels by improvement/land value ratio in 1996.[5] Parcels with improvement/land value ratios of less than 1:1 are considered to have more redevelopment potential, while parcels with improvement/land value ratios of more than 1:1 are considered to have less

---

[3] This does not include 64 parcels that met the criteria but did not have owner data in the GIS.

[4] These estimates probably understate the amount of consolidation. First, we had to estimate individual ownerships based on an exact match of owner names for each taxlot: errors in spelling or slight differences in data entry would cause us to identify two taxlots as having different ownerships, even though they really have common ownership. Second, though our report refers to *parcels*, we are actually dealing with *taxlots*. In most cases they are the same, but it is not uncommon for a parcel (a legally transferable lot of record) to consist of more than one taxlot, especially when the parcels are large.

[5] Developed parcels include parcels that are fully developed, and the developed portion of partially developed parcels.

redevelopment potential. A ratio of less than 1:1 is a typical standard for estimating lands with redevelopment potential.

Table 4-5. Developed parcels by improvement/land value ratio inside the Corvallis UGB in 1996

Description	Acres				
	Comm/ Office	Ind.	Res.	Total Acres	Percent of Total Acres
Parcels with more redevelopment potential					
Land Value 0, Bldg Value 0	2.2	71.0	13.4	86.6	8.0%
Land Value 0, Bldg Value > 0	8.2	16.0	0.7	24.9	2.3%
Imp/Land Ratio Between > 0 and < .25:1	36.4	155.7	26.4	218.5	20.1%
Imp/Land Ratio Between .25:1 and .5:1	15.5	23.9	3.7	43.1	4.0%
Imp/Land Ratio Between .5:1 and 1:1	53.8		33.0	86.8	8.0%
Subtotal	115.9	266.7	77.2	**459.8**	42.2%
Parcels with less redevelopment potential					
Imp/Land Ratio Between 1:1 and 2:1	82.4	3.7	99.2	185.3	17.0%
Imp/Land Value Between 2:1 and 3:1	36.7	24.3	102.5	163.5	15.0%
Imp/Land Value > 3:1	52.0	51.7	176.5	280.2	25.7%
Subtotal	171.1	79.8	378.1	629.0	57.8%
Total	287.0	346.5	455.3	1,088.8	100.0%

Source: LCOG/ECONorthwest, from City of Corvallis GIS & Benton County Assessor

4.4 SUMMARY

Corvallis has 6,710.8 net acres of vacant, buildable (no significant natural, infrastructure, or planning constraints) land within its UGB. About one-third of that land is within the city limits. In addition to the vacant buildable land, many developed parcels have low improvement values that suggest they could be redeveloped (and, thus, be part of the land base that could support new development). Using the assumption (determined by the City, documented in Appendix B, and common in buildable land studies in Oregon) that any parcel where improvement value is less than land value suggests a ripeness for redevelopment, an additional 459.8 acres may have redevelopment potential.

The implications of these findings are explored in the next chapter, which presents a comparison of land supply and demand and an analysis of the sensitivity of supply and demand to the various assumptions that drive those estimates.

Chapter 5

Comparison of Supply and Demand

This chapter summarizes from data and analysis presented in Chapters 3 and 4 to compare "demonstrated need" for vacant buildable land with the supply of such land currently within the Corvallis UGB and city limits.

5.1 COMPARISON OF SUPPLY AND DEMAND

Tables 5-1 and 5-2 show a future land need and supply by plan designation for the Corvallis UGB and city limit between 1996 and 2020. The purpose is to determine whether deficits of land exist for specific plan designations.

The comparison requires assumptions regarding in which plan designations certain types of development are likely to occur. Some of the assumptions are relatively straightforward: for example, we assume the majority of single-family residential development will occur in the low-density residential plan designation. Others are more difficult. For example, commercial uses could locate in one of three plan designations in the City: in this case we lump the land need and supply for these designations together and make a general comparison.

Additional complications arise from plan designations such as the City's Intensive Development Sector that allow multiple uses. We did not specifically allocate any of the future land need to multiple-use designations, but recognize that a portion of future demand can, and will, be met by lands in these designations.

Agricultural plan designations are typically considered available for development when they occur inside a UGB. In Corvallis, however, the great majority of these parcels are owned by OSU: thus, they are considered unavailable for development. Only one parcel of about 175 acres is considered potentially developable. It is in the urban fringe, and the assessor's data base provides no information on ownership. Rather than speculating about whether it will or will not develop, and how, we do not specifically allocate its acreage to any particular use and simply note that its existence may increase the amount of buildable land in the City.

The demand analysis in Chapter 3 leads to our base estimate for total land needed: 1,845 vacant, unconstrained acres for the period between 1996 and 2020. The land supply analysis (Chapter 4) shows the City had 6,711 unconstrained vacant acres in 1996.

In addition to the 6,710.8 acres of unconstrained vacant land, the City had a total of 459.8 acres of developed land with improvement to land value ratios of less than 1:1. Some of that land will redevelop between 1996 and 2020. The amount of land that redevelops depends on a variety of factors including the vacant land supply, regional economic conditions, and City policies. It is

reasonable to assume that that range will be between 20% and 80% of lands with low improvement to land value ratios. We used a conservative figure of 25% for the analysis presented in Tables 5-1 and 5-2. Assumptions of a higher percentage would increase the estimate of buildable land.

The land need/supply comparisons shown in Tables 5-1 and 5-2 indicate that Corvallis has sufficient buildable lands within its UGB to meet needs between 1996 and 2020. Moreover, Table 5-2 shows that Corvallis has a net surplus of buildable land within its city limit. The comparison, however, shows deficits of buildable land in some categories:

- Office: The City has an overall deficit of 187 acres of land designated for office uses. While some of this demand will probably be absorbed in commercial and other designations that allow office-based employment, it is difficult to estimate the exact amount of office-based employment that will be absorbed in other plan designations. Even if 50% of office-based employment locates in other designations, a deficit of nearly 100 acres still exists.
- Light industrial: The City has a small deficit (22 acres) of light industrial land. This probably does not pose a significant problem due to the large surplus of general and intensive industrial land.
- Public/institutional: The City has a deficit of 563 acres of public/institutional land. The majority of this need is for parks (about 330 acres) and schools (about 50 acres). It is not surprising such a deficit exists: parks and schools typically develop concurrent with residential development and use land designated for residential uses. Moreover, it is common for some park development to occur on constrained lands that we have previously taken out of the vacant, buildable land inventory (e.g., steep slopes, wetlands).
- Residential: The city has a substantial surplus of residential land (3,930 acres) in the aggregate, but available land is close to need for both medium-high-density residential (a deficit of 20 acres under base assumptions) and high-density residential (a deficit of 5 acres). Note that if we were to assume the higher percentage of single-family housing that we believe could be justified (see Chapter 3), the deficit for medium-high-density residential would be reduced.

Table 5-1. Comparison of land need and land supply, Corvallis UGB, 1996-2020

Plan Designation	Land Need		Land Supply (Gross Acres)			
	Net Acres	Gross Acres	Unconst. Vacant Acres	Redev Acres[a]	Total Buildable Acres	Surplus/ Deficit
Agriculture			174		174	174
Commercial/Office						
Commercial (CB/LC/SA)	60	76	109	27	136	60
Office (PAO)	176	220	32	1	33	-187
Comm/Office Total	**237**	**296**	**141**	**28**	**169**	**-127**
Industrial						
Industrial (GI/II)	35	44	1,101	49	1,150	1,106
Light Industrial (LI/RTC)	86	108	82	4	86	-22
Industrial Total	**121**	**152**	**1,182**	**53**	**1,236**	**1,084**
Intensive Development Sector[b]			**465**	**0**	**465**	**465**
Public-Institutional	**525**	**657**	**94**	**0**	**94**	**-563**
Residential						
Low Density Residential	337	438	3,876		3,876	3,438
Medium Density Residential	122	156	673		673	516
Medium-High Density Residential	101	126	99	7	107	-20
High Density Residential	16	21	7	8	15	-5
Residential Total	**576**	**741**	**4,655**	**15**	**4,670**	**3,930**
No Plan Designation				**16**	**16**	**16**
Total	**1,460**	**1,845**	**6,711**	**113**	**6,824**	**4,979**

Source: ECONorthwest, 1998.

[a] Redevelopable land includes commercial, industrial and multi-family residential (medium-high and high) land.

[b] No land need was allocated to this sector. The Intensive Development Sector is a mixed use designation that can accommodate residential and commercial uses.

Table 5-2. Comparison of land need and land supply, Corvallis city limit, 1996-2020

Plan Designation	Land Need		Land Supply (Gross Acres)			
	Net Acres	Gross Acres	Unconst. Vacant Acres	Redev. Acres[a]	Total Buildable Acres	Surplus/ Deficit
Commercial/Office						
Commercial (CB/LC/SA)	60	76	109	27	136	60
Office (PAO)	176	220	32	1	33	-187
Comm/Office Total	**237**	**296**	**141**	**28**	**169**	**-127**
Industrial						
Industrial (GI/II)	35	44	487	40	526	482
Light Industrial (LI/RTC)	86	108	82	4	86	-22
Industrial Total	**121**	**152**	**568**	**44**	**612**	**460**
Intensive Development Sector[b]						
Public-Institutional	**525**	**657**	**72**		**72**	**-585**
Residential						
Low Density Residential	337	438	901		901	463
Medium Density Residential	122	156	579		579	423
Medium-High Density Residential	101	126	43	7	50	-76
High Density Residential	16	21	7	8	15	-6
Residential Total	**576**	**741**	**1,530**	**15**	**1,545**	**804**
Total	**1,460**	**1,845**	**2,311**	**87**	**2,398**	**553**

Source: ECONorthwest, 1998.

[a] Redevelopable land includes commercial, industrial and multi-family residential (medium-high and high) land.

[b] No land need was allocated to this sector. The Intensive Development Sector is a mixed use designation that can accommodate residential and commercial uses.

5.2 SENSITIVITY ANALYSIS

Land needs analyses are premised on a number of assumptions that have a profound impact on the outcome of the analysis. Key assumptions that go into land need are population and employment forecasts, development density, and demographic shifts. The supply analysis tends to be more empirical in nature—the rate of redevelopment is the key assumption on the supply side.

Table 5-3 shows the sensitivity of land need and supply to selected variables. The intent of this analysis is to provide an estimate of land need under conditions to make the need greater: a scenario where population and employment grow faster than expected, densities are lower than expected,

and redevelopment occurs at a lower rate than expected. If, under such conditions, sufficient land still exists to meet the forecasted need, then a strong case has been made that the UGB does not need to be expanded.

Table 5-3. Sensitivity of land need and supply

Change in Assumption	Affect
Forecasts	
Increase 2020 population forecast	The City has an acknowledged 2020 population forecast of 58,461. The 2020 Vision process developed a forecast of 63,500. All other things being equal, this increases the residential land need by about 375 gross acres. Sufficient residential land exists to accommodate the additional need.
Increase 2020 employment forecast	Increasing the employment growth rate from 1.0% to 2.0% annually increases commercial and industrial land need by about 690 gross acres (about 125%). About 450 acres of this additional land need would be for commercial land, while 240 would be for industrial land.
Land Use	
Decrease 1996-2020 average residential density from 7.5 du/net acre to 6.0 du/net acre to account for underbuild	Corvallis needs 4000 units between 1996 and 2020 to accommodate population growth. Decreasing the density from 7.5 du/net acre to 6.0 du/net acre increases residential land need by about 23% (175 gross acres).
Decrease overall EPA from 20 to 15	Decreasing the employee-per-acre ratio from 20 to 15 yields an increase non-residential land need of about 28% (about 150 acres).
Change the single-family/multi-family residential split for new development from 50%/50% to 70% single-family and 30% multi-family	The split of single-family and multi-family units impacts land needs. All things being equal, more single family units equates to a greater land need. For the base case analysis we used a 50%/50% sf/mf split, consistent with development trends in Corvallis over the past 5 years. The RELM model predicts a big shift: 70%/30% sf/mf. Changing the split while holding densities constant increases the overall residential land need by about 15% (about 125 acres)
Redevelopment potential	About 115 acres of land within the UGB were considered to have redevelopment potential. The base case assumption was that 25% of land with redevelopment potential would redevelopment between 1996 and 2020. Land with redevelopment potential account for less than 0.2% of vacant land. Reducing the assumption to 10% would reduce redevelopment potential to about 50 acres.

Source: ECONorthwest

For all of these scenarios, Corvallis still has a surplus of vacant buildable land. Even combining all of the factors described in Table 5-3 yields a total land need of about 3,360 acres, while reducing supply by only 50 acres: the

net surplus of vacant, buildable land would about 3,500 acres. Again, there is no lack of vacant, buildable land in the UGB in the aggregate.

5.3 PUBLIC POLICY CONSIDERATIONS

The clear conclusion from the previous section, and probably the most important finding of this report, is:

> *Under the adopted rules and accepted practices that govern land analysis in cities in Oregon, the City of Corvallis has enough vacant buildable land inside its Urban Growth Boundary to accommodate expected growth: it would be very difficult to justify a UGB expansion at this time.*

That general conclusion, applies in the aggregate and in the long run: i.e., it is based on a comparison of total buildable land to expected land need for all development types over a 20-year period. State statutes and good planning require a more detailed evaluation to determine whether the buildable land inside the UGB is planned in such a way that the amount of buildable land by plan designation (e.g., medium-density residential) is adequate to meet the needs for that use. It is obviously possible to have a surplus of land in the UGB in the aggregate, but not enough land designated for certain types of use. Moreover, it is possible to have ample land to meet a forecasted 20-year need and simultaneously have builders complaining about a shortage of currently buildable parcels, and buyers and renters complaining about the high price of housing.

Our analysis suggests that not only does Corvallis have more than sufficient buildable land within the existing urban growth boundary to meet long-term growth needs, but that it also has sufficient buildable land designated for residential and industrial uses to meet projected needs for these broad land use categories. For residential land, some additions to the medium-high-density plan designation from either of the lower-density residential designations would be appropriate. For industrial, the City should either (a) continue to rely on its existing over-supply of General Industrial land to meet Limited Industrial needs, or (b) re-designate some General Industrial land to Limited Industrial to assure greater compatibility and choice among alternative Limited Industrial sites.

For commercial land, the City could either (a) continue to rely on its existing over-supply of Commercial land to meet more specific Office Commercial needs, or (b) re-designate some Commercial land (LC or SA) to Office (PAO) to assure greater compatibility and choice among alternative office commercial sites.

For public/institutional uses the City is probably not required to re-designate land to address the potential deficit. As we noted, the City can rely on its oversupply of low-density residential land and its subdivision and PUD process to meet most of this need, which is mostly for park land.

A land inventory and need analysis that complies with state requirements for long-run planning is not the same as a market analysis for a development proposal, which typically has a short-run view (1-3 years). In the short-run, land available for development may be constrained by lack of proper zoning, lack of services, neighborhood opposition to development, the situation and expectations of land owners and users, and so on. In the long-term, it is reasonable to assume that prices, preferences, and policies will adjust so that land that is vacant and buildable becomes available for development. Thus, it is not uncommon for a long-run land need inventory to find ample land supply to meet state requirements at the same time land and housing prices are rising and developers and builders are having difficulty finding buildable land at prices they are willing to pay.

From our observations and interviews, it appears that many people from all walks of life believe that housing prices are accelerating too rapidly in Corvallis, and many of those people attribute a large part, if not all, of that increase to constraints on buildable land. A recent article in the Gazette-Times cited a report by the Available Housing Task Force of the Chamber of Commerce showing the median sales price of homes in Corvallis increasing at almost 15% per year between 1990 and 1996.

That increase in home prices has a couple explanations. Some of it is simply inflation: even with no increases in demand one would expect some price increase. But inflation in the state has been running at 3-4% annual and does not explain the larger increases. What does explain them, from an economic perspective, are factors of demand and supply. Corvallis has a good job base, and attractive physical setting and built environment that it has worked hard to protect and enhance. Those factors make it attractive as a residential location. Given the strength of the Oregon economy since 1990, and of job growth and wages in Corvallis, it is not surprising that more households would have a preference for living in Corvallis, other things being equal.

But other things are not equal. A surge in demand for housing cannot be immediately supplied by adding a few people and hours to the operation of an assembly line. Building a house takes a long time and requires capitalization. The public sector has to respond with urban services. Thus, in a relatively small housing market, a surge in demand leads inevitably to increases in price to ration the scarce supply. The boom-bust cycles of real estate markets are evident in all cities: demand and supply are rarely in equilibrium, and prices rise and fall (sometimes, though usually they just don't rise as quickly) to take up the slack.

Of interest to public housing policy and a study like this one is whether there are excessive constraints on the supply of buildable land that cause prices to rise "too much." This study has addressed one of those constraints in detail: the urban growth boundary. As we noted, from a long-run perspective, Corvallis has vacant, buildable residential land in its UGB that exceeds what any reasonable forecast of population growth would require for housing development. But as everyone knows, not all that land is available for development now for several market and governmental reasons.

Even if all the land had services and were properly planned and zoned, the decisions of individual land owners and developers would keep some of the land off the market. This would not be much of a constraint, however, if the full 20-year supply of land were otherwise ready for development.

The full 20-year supply of land, of course, is *not* all ready for immediate development: most of it is not. It would not make economic sense for service providers to extend (and pay for) services (especially roads, water, and sewer) to all parts of the UGB. So the issue is to make sure that they are available to enough land, with enough willing owners, to allow development to proceed without running up prices excessively. Nobody knows exactly how much land that should be, but it almost certainly has to enough to accommodate several years of demand if there is going to be any opportunity for choice and scale economies. We would hazard a guess that, roughly, about five years worth of buildable land should be within striking distance of public services.

That striking distance obviously has a physical component: the land has to be able to be reached by the services in an economical fashion. Most people assume that means that such land will be proximate to the currently developed area. But striking distance also has a policy/political component. Corvallis, for example, requires annexation to get services, and voter approval for annexation. If a lot of land is in the UGB but outside the city limits, it is possible that the City could have a short-run land supply problem. The quantitative evidence is that Corvallis does not currently have that problem: it has about 1,500 acres of vacant, buildable, residential land inside its city limits. Even a pace of 400 units per year and 70% single-family development, the annual need is only about 50 acres.

But if there's so much land, why are housing prices rising? There are several possible explanations, but trying to determine which apply and are most important is beyond the scope of this project. They include: lack of large-scale developers or builders (possible); lack of parcels of sufficient size to allow large-scale development (not likely for low-density; likely for medium- and high-density); excessive profits by developers (unlikely: the excess profits accrue to landowners, who may or may not be developers); few land owners and sellers (the data suggest some possibility for medium-high- and high-density residential), and the ability to hold back land to speculate on continued increases in value; neighborhood opposition; city design requirements (e.g., site development standards, overlays for planned development) and fees (moreover, it may be these regulations that allow the City to maintain the quality of its services and environment that make it an attractive place to live, stimulating the demand that pushes up the prices).

Realtors we interviewed cited several factors that could contribute to the increase of housing prices. While there was not unanimous agreement that the City has a shortage of available land, most realtors believed that no, or certainly too little, residential land is unavailable for immediate development, citing annexation voting, speculation on vacant land, and cost of providing infrastructure as potential reasons.

As a final point on this topic, note that increasing housing prices are not necessarily and completely bad. First, they are partially a result of the success of Corvallis in maintaining the amenities that make it a desirable place to live. People pay more for quality products. Second, from the perspective of existing homeowners, increasing prices mean increasing value of their investments. In sum, the issue of housing prices seems to be one of balance: housing prices should definitely not fall, and maybe should increase a little, but not to much. If they do rise a lot because the City chooses policies that maintain quality services and environments that simultaneously increase the cost of development, then the City must decide whether to address housing affordability issues by decreasing its standards, increasing its share of costs for public service extensions to new development, and finding ways to subsidize households that cannot afford to rent or purchase the kind of housing they want or need.

To comply with Statewide Planning Goal 10 (Housing), one must consider certain additional issues with respect to residential land.

Manufactured homes on individual lots are permitted in all of the City's residential districts. The City's LDR zoning districts alone (RS-3.5, RS-5 and RS-6) contain more than enough land for residential development. There is no need to determine the need for manufactured homes on individual lots separate from the need for single-family housing in general.

Manufactured dwelling parks must be allowed in a zone or zones that allow from 6-12 dwelling units per acre. Table 5-1 shows the City's MDR designation (which allows 6-12 dwelling units per acre) has a significant surplus of buildable land. Therefore, the City has sufficient buildable land to meet identified need for manufactured home parks.

Table 5-1 indicates that a shortage of buildable land exists in the Medium-High-Density Residential plan designation. We anticipate that much of this deficit will be handled through development and re-development in the City's mixed use zones. The City should consider, however, rezoning some LDR or MDR land to MHDR.

Corvallis has not established special review standards for government assisted or farm worker housing. These housing "types" are allowed within the City's residential zoning districts based on review standards that apply equally to all proposed housing developments, regardless of funding sources or end-users. Thus, these housing types are subsumed within the broader single-family and multi-family categories and subcategories. As noted in Table 5-1, there is more than sufficient LDR and MDR land within the existing UGB to meet long term housing needs for all needed housing types.

The policy analysis presented above takes a long-run (20-25 year) view of buildable land. In doing so it is consistent with state requirements. But it is important to note that professionals in land markets and development usually take a shorter run view. At the extreme, some view the supply of buildable land as land that is on the market that they could buy, provide services to, and develop at what they deem a reasonable price. In this view,

much of the land outside the city limits that we have categorized as buildable is not really available for immediate development.

Thus, though the data indicate that Corvallis clearly has a surplus of residential land from a long-run perspective, residential land availability and housing affordability was mentioned in all of the interviews we conducted. Is there a problem that the City needs to address with policy?

One potential argument is that the requirement to allow votes on annexation reduces the ability to get services to vacant land to allow it to be developable (because annexation is a necessary condition for urban services, which are necessary for urban-level development). But though annexation voting may have the effect of limiting additions to residential buildable land that is in the city limits, our buildable lands inventory found Corvallis has nearly 1,500 acres of vacant buildable land designated for low- and medium-density residential uses within the city limits.

That land supply is apparently not, by itself, sufficient to keep housing costs low: Corvallis also has some of the highest housing values in the Willamette Valley. Analysis of assessment data placed the median value of single-family residences in 1996 at about $137,000 and the average value at $148,000. Interviews with realtors indicate that vacant lots in platted subdivisions start at $50,000. Such high land values relative to the region suggest an inability to build housing quickly enough to satisfy the demand. Land constraints could be part of the problem, but so could the capacity of developers or City policy for providing services, including service costs.

There are, of course, several ways to reduce housing costs. Almost all of them require households to accept less of what they want: smaller units, smaller lots, fewer amenities. One way to allow households to maintain the single-family square footage and types of amenities that are most important to them is to substitute (lower-cost) manufactured housing for stick-built housing. The demand analysis found that substantial demand exists for lower-cost single family residences: for Corvallis this means units in the $100,000 to $130,000 range. Many communities meet this demand for lower-cost housing through development of manufactured home subdivisions. The problem in Corvallis, however, is that high land values push developers to build high-value homes. (A typical rule-of-thumb is that land cost should be about 20-25% of the selling price). Thus, high land prices in the city limits, coupled with a potentially slow rate of future annexation, could cause our estimate that 10% of new housing would be manufactured housing to be overstated.

Appendix A

Glossary

Actual Housing Mix and Actual Net Density—as defined by state statue, the housing mix (e.g., single-family, multi-family) and density (dwelling units per acre) that has actually been developed in the community in the last five years or since the last periodic review, whichever is greater.

Buildable lands—means lands in urban and urbanizable areas that are suitable, available and necessary for residential uses. Buildable lands include both vacant land and developed land likely to be redeveloped.

Constrained land—land that is not part of the buildable land inventory because of physical impediments (e.g., steep slopes, floodway) or legal impediments (e.g., designated wetlands or riparian area) to development.

Developed land—parcels that have improvements on them with no vacant areas.

Drainageways/riparian corridors—include waterways mapped within the river and stream overlay. The buildable land inventory assumes a corridor 170 feet wide would define undevelopable land around each drainage on the River and Stream overlay map (assumes a 20' channel, 50' protected area on either side of channel measured from top of bank, and 25' buffer adjacent to protected area). Thus, we will consider all land 85' from the centerline of any drainage on the river and stream overlay as unbuildable.

Floodplain—the area adjoining a stream that is subject to inundation by flood. The floodplain consists of two parts:

1. **Floodway fringe**: The area of the floodplain lying outside the floodway.

2. **Floodway**: the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than 0.2 feet.

Government assisted housing—means housing that is financed in whole or part by either a federal or state housing agency or a housing authority as defined in ORS 456.005, or housing that is occupied by a tenant or tenants who benefit from rent supplements or housing vouchers provided by either a federal or state housing agency or a local housing authority.

Gross Vacant Acre — an acre of vacant land before land has been dedicated for public right-of-way, private streets, or public utility easements. For example, a standard assumption is that between 20% and 30% of land in a subdivision is used for streets and utilities: if so, then a

gross vacant acre will yield only about 35,000 sq. ft. (70%-80% of a full acre) for lots.

Group Quarters — All persons not living in households are classified as living in group quarters. Two general categories of persons in group quarters are recognized: (1) institutionalized persons and (2) other persons in group quarters such as dormitories (also referred to as "noninstitutional group quarters"). Persons in group quarters are not considered to be living in housing units.

Hazardous Land: Slide Areas, Steep Slopes, and Earthquake Faults—Without current evidence that the City has a great many slide scars, it is assumed that this issue not significant. Though the City has not inventoried its steep slope areas, only limited development constraints are anticipated due to this hazard. The City provides a way for property owners to transfer density off of steep slopes and special engineering can minimize impacts on development density in the majority of cases, therefore, the buildable lands inventory is not expected to be impacted in a significant way.

Historic Structures — are structures identified on the City and County land use maps will not constrain development on existing vacant lands. Archeological issues will not constrain development.

Housing Units — A housing unit is a house, an apartment, a mobile home or trailer, a group of rooms or a single room occupied as separate living quarters or, if vacant, intended for occupancy as separate living quarters. Separate living quarters are those in which the occupants live and eat separately from any other persons in the building and which have direct access from outside the building or through a common hall.

Institutional Use — includes publicly owned parcels, parks, governmental, or public facilities and are considered unavailable for development. The exceptions are (1) the City-owned airport industrial park, which is leasable land intended for urbanization, and (2) the more-or-less developed area of land owned by OSU, which will almost certainly support future expansions that will accommodate employment and residences (group quarters).

Lands Above Third Level Water Service (560' in Elevation)—The adopted City water master plan does not serve lands above 560' in elevation (either by a reservoir or by a pumping type system). Without the ability to provide City water the Land Development Code would not permit subdividing the land. Therefore, the only way development could occur is if one dwelling unit were located on an existing lot where the owner/developer was successful in drilling for water.

Living Quarters — Living quarters are classified as either housing units or group quarters. Usually, living quarters are in structures intended for residential use (for example, a one-family home, apartment house, hotel or motel, boarding house, or mobile home). Living quarters also may be in structures intended for nonresidential use (for example, the rooms in a warehouse where a guard lives), as well as in places such as tents, vans, shelters for the homeless, dormitories, barracks, and old railroad cars.

Net Vacant Acre — an acre of vacant land after land has been dedicated for public right-of-way, private streets, or utility easements. A net vacant acre has 43,560 square feet available for construction, because no further street or utility dedications are required: all the land is in lots.

Open Space — are lands designated either as Open Space– Agriculture or Open Space–Conservation in the City's Comprehensive Plan.

Parks — are lands dedicated to public parks within the UGB. No development potential is expected on existing park lands within the City. No development potential is expected for vacant lands within the fringe area that are owned by the City and are part of the Parks and Recreation Department's park land inventory.

Partially vacant constrained land—same as partially vacant, but with constraints.

Partially vacant land—parcels with some development, but vacant portions large enough to develop.

Probable wetlands—wetlands that are likely to be protected under federal law. The buildable land inventory assumes any land so designated can be developed to only 50% of the intensity/density that is permitted under current land use designations

Redevelopment Potential — are parcels with developed structures that are likely to be demolished and new buildings constructed in their place. Redevelopment Potential means all commercial, multi-family residential (District Designation RS-12 or RS-20), or industrial parcels, any of which is greater than 0.1 acres *and* have land values greater than improvement values *and* are not already classified as vacant or partially vacant. Not all, or even a majority of parcels that meet these criteria for redevelopment *potential* will be assumed to redevelop during the planning period.

Scenic Land — is land that has scenic resources. For the purpose of the supply analysis, no scenic land was removed from the inventory.

Significant wetlands—wetlands that are protected under federal law. Significant wetlands are not part of the buildable land inventory.

Undevelopable constrained land—vacant constrained or partially vacant constrained parcels with unconstrained remainders smaller than 0.075 acre (3,250 sq. ft)

Undevelopable vacant land—vacant parcels smaller than 0.075 acre (3,250 sq. ft).

Urban Fringe—the area between the city limits of Corvallis and its urban growth boundary.

Vacant constrained land—same as vacant land, but with portions that fall within significant wetlands, riparian areas or above 560' in elevation.

Vacant land—parcels greater than 0.075 acre (3,250 sq. ft) with improvement values less than $5,000 and no physical constraints.

Appendix B

Methods, Data and Assumptions

B.1 BACKGROUND

We met with City staff and Work Group members on December 1. In a phone conversation on December 10, David Dodson and Terry Moore agreed that ECO would send the memorandum on Methods (specified on page 2 of the scope of work in our contract) after we received the work in progress by several of your Work Groups regarding definitions and criteria for buildable land. On December 24 ECO received your memorandum summarizing their recommendations.

We have reviewed those recommendations and concur with most of them. This memorandum summarizes the definitions, methods, and data sources we propose to use in the rest of this study. This memorandum—with any amendments suggested by your review or by changes that occur during the course of the analysis—will become an appendix to our Land Needs Assessment (allowing the report itself to focus on results and policy implications).

As soon as you and any others you think appropriate (staff and Work Group members) have reviewed this memorandum, please call so we can discuss any outstanding issues. When any such issues are resolved, we will begin our analysis. We are aiming to begin that analysis by mid-January if possible.

To facilitate your review of this memorandum, the next section lists and briefly explains the key changes that we suggest to the recommendations in your memorandum of December 23. After that section, however, the memorandum does not talk about changes or options: we describe only the methods we recommend. If you disagree with our recommendation you should say so. We'll discuss the issue and then make final adjustments to this memorandum.

B.2 SUMMARY OF CHANGES RECOMMENDED TO THE MEMORANDUM OF DECEMBER 23

A memorandum from David Dodson dated December 23, 1997, summarizes the recommendations of the Work Groups with respect to assumptions, definitions, and methods for the Land Need Assessment (primarily for the portion of that analysis that estimates buildable land). We reviewed those recommendations thoroughly and accept most of them. Some, however, may cause either procedural or methodological problems. Terry Moore discussed those issues with David Dodson by phone on

December 31 and concluded that none of the changes ECO recommended was clearly unacceptable to the City. Here are the key changes to the recommendations in the memo of December 23:

- Vacant land. Drop the requirement that vacant land not have a building permit to be considered truly vacant. The fact that a vacant parcel may have been issued a building permit that has not resulted in construction as of the effective date of the analysis (July 1996) does not keep that parcel from accommodating some of the demand forecasted to occur after that date.

- Level of detail for rivers and streams. The Work Group did an excellent job of defining in detail how to estimate riparian areas (and wetlands, discussed later). Unfortunately, the level of information is not uniform across all of Corvallis. Our recommendation is that the base analysis of constrained and buildable land be based on the level of information that is common across all areas of the City and that can be attributed to parcels. We will then look at the detailed work in the Jackson-Frazier drainage to get an idea of the magnitude of the errors that might be introduced by this assumption.

- Policy issues. For a few constraints, as we understand it, the Work Group was making its best judgment about policies that it thought desirable for environmental protection, and that might be adopted by the City. You clarified, however, that such policy changes might not find their way into City development codes for over two years, which raises the question: What set of policies should we assume apply? For example, current codes allow development in flood plains to the full densities allowed by the underlying zoning, but the December 23 memo says to allow only one unit per lot (a standard that the City *could* adopt, but that is not currently in its codes). DLCD staff advised David Dodson that Corvallis should base its analysis on *existing* policy: that is what we will do.

- Wetlands. Instead of one dwelling unit per lot on residentially zoned land, assume *no* development on significant wetlands.

- Flood plains. Instead of one dwelling unit per lot on residentially zoned land, assume that development can occur to the full extent allowed by zoning.

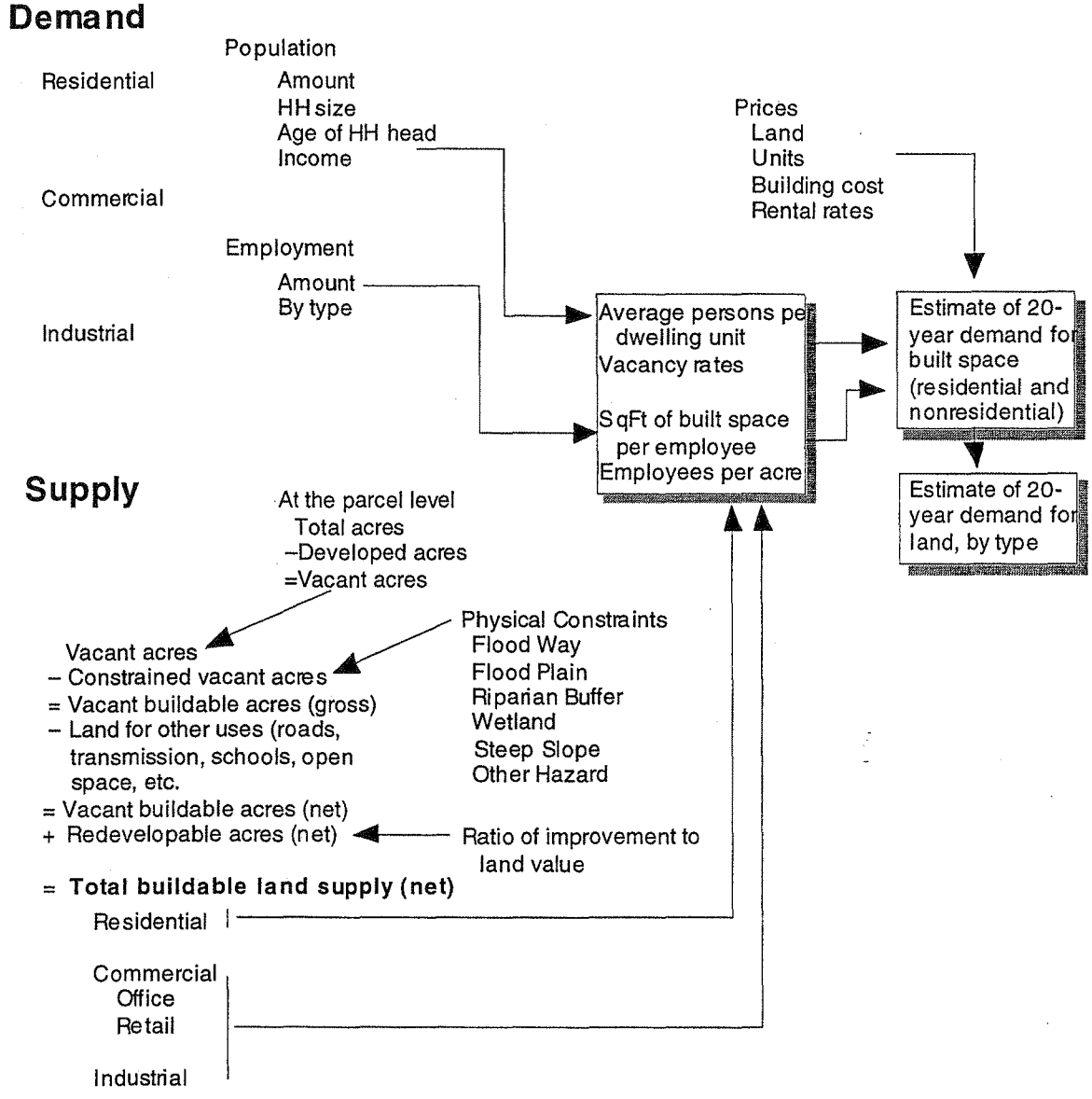
- Riparian corridors. Use GIS overlay of major rivers and streams (not all drainages, which are mapped for only one subarea of the City). Assume a buffer 60' on either side on the drainage centerline. We do not subtract from the vacant land inventory an additional 25' buffer on both sides of this riparian corridor as proposed by the Working Group. Even if the City eventually requires this buffer, it can probably be handled as part of setbacks, and not significantly affect the density of development.

- Scenic lands. We recommend no adjust to the land inventory for scenic land; the Work Group had recommended reducing net buildable lands by an additional 3%.

B.3 OVERVIEW OF METHODS

The Scope of Work in our contract describes methods in general, and why we think of a Land Need Assessment as containing a *supply* analysis (buildable and redevelopable land by type) and a *demand* analysis (population and employment growth leading to demand for more built space: residential and non-residential development). Figure 1 shows the key relationships. The geographic scope of the Land Need Assessment is all land inside the Corvallis Urban Growth Boundary.

Figure B-1: Components of a Land Needs Assessment



This memorandum is organized according to the two main heading of Figure 1: Supply and Demand.

B.4 SUPPLY OF BUILDABLE LAND, BY TYPE

B.4.1. DEFINITIONS

There are many ways that "vacant land" and "buildable land" can be defined. We have to pick one. Figure 2 shows an organization that is as good as any, and better than most, in that it is internally consistent.

Figure B-2: Classification scheme for urban land

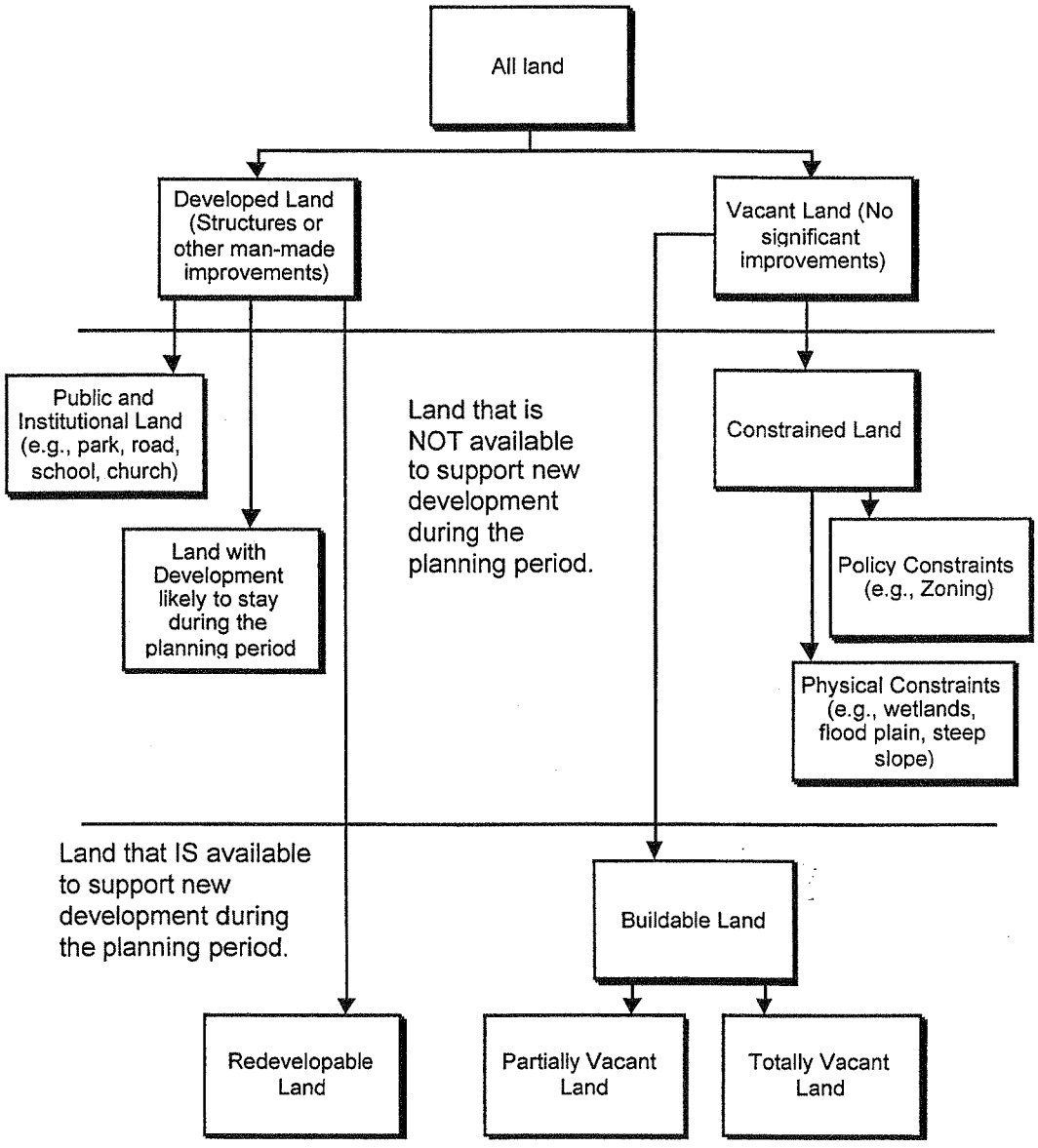


Figure 2 illustrates that:

- Vacant land means land without structures or other significant man-made improvements. In general, "vacancy" is not a difficult determination to make: most people walking the land or looking at an aerial photograph could agree on what land was covered by significant structures that constituted existing development (and thus precluded new development unless the existing development were demolished).

- Vacant land that is constrained (either physically or legally) is not buildable.

- Complications occur when the physical assessment of vacancy gets overlaid on parcel boundaries. If parcel boundaries did not have to be considered, then every square foot of land can be characterized as vacant or developed. Parcel boundaries, however, often lump developed and vacant land together on the same parcel (e.g., one houses on a three-acre lot). Thus, on a parcel level vacant land that is not constrained (i.e., buildable land) comes in two varieties: totally vacant (no significant improvements on the parcel) and partially vacant (synonymous in this study with under-utilized land).

- Redevelopable land is not vacant, but it is available to support some of the new development demanded by increasing population and employment. Redevelopment occurs on redevelopable land. Infill, however, is defined in this study not as a type of vacant land, but as a condition of a parcel relative to surrounding parcels. If surrounding parcels are primarily developed, then an isolated buildable parcel (i.e., a parcel totally or partially vacant) is also an infill parcel.

- Thus, there are three types of land that can support new development: buildable vacant land, buildable partially-vacant land, and redevelopable land.

Figure 2 gives general definitions of different types of land; those definitions must be more specific, however, about measurement and thresholds. For example, how much vacant land must a developed parcel have to allow the parcel to switch from "developed" status to "partially vacant" status? The details of the definitions for this project follow.[1]

B.4.1.1. VACANT LAND

Vacant Land means all parcels greater than 0.075 acre (3,250 sq. ft) with improvement value < $5,000. The minimum lot size for a residential dwelling unit in Corvallis is currently 3,250 sq. ft., but very few residential parcels of this size exist. A large number of residential and downtown commercial lots are platted at 5,000 sq. ft. and are buildable if vacant. These parcels with

[1]The majority of the definitions that follow are as proposed by the Working Groups and summarized in a memorandum from David Dodson dated December 23, 1997.

improvement values of $5,000 or less are considered vacant. Land with improvement value greater than the $5,000 threshold may still be classified as partially vacant or as redevelopable.

B.4.1.2. PARTIALLY VACANT (UNDER-UTILIZED) LAND

Under-Utilized Land falls in one of two classes, depending on whether it is inside or outside City limits. The first class includes all residential parcels within the City limits that are greater than 0.4 acres, with 0.2 acres subtracted to account for the residence, regardless of the zoning district. The remainder portion of the parcel is considered ìbuildable landî for purposes of this analysis. The second class includes all residential parcels outside the City limits and within the UGB greater than 1 acre, with 0.5 acres subtracted to account for the residence, regardless of zoning district. The remainder portion of the parcel is considered *buildable land* for purposes of this analysis. For non-residential parcels the Work Group made no recommendation. Non-residential land is more difficult than residential land. The percent of lot coverage (the area of the building footprint to the parcel size) vary from almost 100% (downtown), to 25-33% (suburban retail and light industrial), to as low as 10% (heavy industrial, with extensive seasonal yarding areas or other unused land). The percents vary by type of use and by location. We recommend simplifying the analysis by assuming conservatively an average of 25% coverage and a minimum remainder of acres for land to be classified as partially vacant. An example of the calculation: a three-acre parcel with a 10,000 sq. ft. building footprint (about 1/4 acre), yields one acre developed and two acres as partially vacant (under-utilized). Some parcels did not have building area data. For those parcels, we reviewed improvement to land value ratios and parcel size to determine whether to consider the parcel fully- or partially-developed. Parcels under two acres with improvement to land value ratios over 1:1 were considered developed. All other parcels were considered partially developed.

Parcels in the first residential class are often small parcels associated with an existing residence and are more likely to develop at urban densities as compared to lands outside the City limits. The existing residences within the City limits are likely to be parceled into a city size lot, so 0.2 acres (8,712 sq. ft) have been removed for the existing residence. The second residential class is for larger parcels outside the City Limits and within the UGB. These parcels are likely to contain farmhouses or larger estate homes, therefore 0.5 acres have been removed for the existing residence.

B.4.1.3. CONSTRAINED LAND

Constrained Land is subtracted from Total Vacant Land to get Buildable Land (which is further divided into totally vacant and partially vacant based on parcel boundaries and existing development on parcels). There are several categories of constraints.

B.4.1.3.1. Wetlands

Your memo of December 23 covers wetlands issues in detail. Here is the summary of how we will proceed.

- Where *significant wetlands* have been explicitly delineated, use those delineations and assume any land so designated is not part of the buildable land inventory. We recognize that in some cases the City may allow development on these parcels (e.g., via density transfers, or off-site mitigation), but the impact on amount of development accommodated inside the UGB will be small. We think the City should be able to distinguish between assumptions it makes about the use of wetlands for its Land Needs Assessments (i.e., that significant wetlands are generally not developable), and how the City responds on a case by case basis to special situations of efficiency and equity on specific parcels in significant wetland areas. In other words, assuming no development on significant wetlands for the purposes of the Land Need Analysis does not preclude the City from allowing such development in site-specific cases (though the City may choose to adopt policy to limit that possibility).

- Where *probable wetlands* have been explicitly delineated, use those delineations and assume any land so designated can be developed to only 50% of the intensity/density that is permitted under current land use designations. At minimum, assume one dwelling unit per lot.[2] Given current State/ Federal wetland management programs, where development with mitigation is most likely to be permitted on these lands and where the mitigation is most likely to happen on site, and given that future development is most likely to be on "farmed wetlands," it is anticipated that the state will follow its practice of using a 1:1 ratio (1 acre of restoring a wetland permits 1 acre of development). During the City's Goal 5 process Corvallis may adopt a different management approach, however, the results of that process are uncertain so State management guidelines should be assumed.

- In other basins with significant undeveloped land that do *not* have significant or probable wetlands explicitly delineated,[3] base the estimates of wetlands on the data on hydric soils (which exist) and the relationship between hydric soil and wetland found in the basins where detailed wetlands analysis has been completed. For example, the amount of significant wetlands in the Oak Creek Basin will be

---

[2]The Probable Wetland Inventory for the Squaw Creek Basin (1994) and the Probable Wetland Inventory for Jackson/Frazier Basin (1997) identified many different types of wetlands according to the Federal government's classification system. The portion of these wetlands that the State identifies as significant is less than the total amount of jurisdictional wetlands in the basin. For these two basins, the State has adopted data using their *Oregon Freshwater Wetlands Assessment Methodology* which specifies which wetland sites are significant.

[3]The only other significant basin areas not developed are the Oak Creek Basin (much of which is OSU agricultural lands, the Airport Basin south of Goodnight, and a small amount of the Dixon Creek basin (i.e., the upper portions of Timberhill).

found by averaging the percent of significant wetlands in the Squaw Creek Basin and the Jackson/Frazier basin and multiplying that percentage times the estimated probable wetlands in the Oak Creek Basin. For the Airport Basin, assume that 8% of lands south of Goodnight Avenue are jurisdictional wetlands and that 33% of these are significant.[4]

B.4.1.3.2. Floodplain

The memo of December 23 suggested limiting development in the floodplain to one unit per existing lots. That creates a problem. The City code currently allows development to the full extent permitted by the underlying zoning, provided floor elevations are at least one foot above the floodplain's highest elevation. That regulation, combined with the potential for density transfer or clustering through a PUD process, argues for not considering floodplains as a constraint. DLCD's position, per David Dodson's conversation with staff, is that any reductions to buildable land for environmental protection must have an explicit policy base. Thus, we recommend *not* reducing the buildable land supply or the density of development it will support if floodplains are the only constraint.

B.4.1.3.3. Drainageways

Use the City's River and Stream overlay for the entire City. The overlay consistently shows major streams, but not all drainageways. Only the Jackson/Frazier basin has detailed drainage mapping. By using only the River and Stream overlay we will underestimate the amount of vacant land that might be lost to riparian buffers. On the positive side: (1) the error is offset at least partially by the fact that some of the drainages not counted are already covered by other constraints (e.g., wetlands, flood plains); (2) some of the drainages mapped in the Jackson/Frazier basin should probably not have 170-foot riparian buffers around them (e.g., drainage ditches along highways); (3) the estimates we get will be consistent, and we will know the direction of the error; and (4) we can look in detail at the Jackson/Frazier basin to estimate and report the magnitude of error.

The Work Group recommends protecting the average width of a river corridor. A corridor 170 feet wide would define undevelopable land around each drainage on the River and Stream overlay map (assumes a 20' channel, 50' protected area on either side of channel measured from top of bank, and 25' buffer adjacent to protected area).[5] Thus, we will consider all land 85'

---

[4]To obtain the anticipated percentages of the basin that is likely to be wet and what portion of that is likely to be significant, a DSL approved wetland analysis for the City's lands near the Airport was extrapolated to apply to the other flat lands within this basin. This extrapolation is reasonable given the similar terrain of other lands in the basin and given knowledge that other industrial property owners in the basin have generally had similar findings when they obtained their wetland delineation approvals from DSL.

[5]The above calculations are based on an assumed average channel width of 20', the typical 50' wide area that is generally protected by using the City's current drainage dedication formula specified in the Land Development Code

from the centerline of any drainage on the river and stream overlay as unbuildable.

B.4.1.3.4. Hazardous Land: Slide Areas, Steep Slopes, and Earthquake Faults

Without current evidence that the City has a great many slide scars, it is assumed that this issue not significant. Though the City has not inventoried its steep slope areas, only limited development constraints are anticipated due to this hazard. The City provides a way for property owners to transfer density off of steep slopes and special engineering can minimize impacts on development density in the majority of cases, therefore, the buildable lands inventory is not expected to be impacted in a significant way. The hazard represented by the Corvallis fault can probably be addressed by site design and is assumed not to create a loss in development potential.

B.4.1.3.5. Lands Above Third Level Water Service (560' in Elevation)

The adopted City water master plan does not serve lands above 560' in elevation (either by a reservoir or by a pumping type system). Without the ability to provide City water the Land Development Code would not permit subdividing the land. Therefore, the only way development could occur is if one dwelling unit were located on an existing lot where the owner/developer was successful in drilling for water. We will use this overlay to identify existing parcels whose centroid falls in the third-level boundary and then limit their development potential. Only a very small percentage of the City's vacant land is in this overlay.

B.4.1.3.6. Parks

No development potential is expected on existing park lands within the City. No development potential is expected for vacant lands within the fringe area that are owned by the City and are part of the Parks and Recreation Department's park land inventory.

New growth will cause demand for parks on lands not now owned by the City. The City estimates that it currently has about 20 acres of parkland per 1000 people. In the May 1991 Land Acquisition Strategy report, Corvallis specifies 35 acres of parkland for every 1,000 residents. Preliminary estimates are that there are 115 acres of vacant land designated as parkland. Given that the City does not currently meet the standards it is imposing on new development, we will assume that any vacant land the City owns for parks and open space is meeting existing needs, and that for every 1000 new people the City will acquire (either directly via purchases (funded by, for example, SDCs) or by developer contributions of land) 35 acres of parkland.

(established to assure adequate room to allow meandering and minimize maintenance costs, and to address water quantity and quality issues), and the information provided by the EPA indicating that it takes at least 25' of undeveloped land (no impervious cover, no cut and fills) to avoid damage to the riparian corridor along a drainageway).

One option is to backout parkland from the residential land inventory at that rate. Alternatively, we could use a slightly lower rate to account for the likelihood that park and open space land often overlaps areas that are otherwise deemed unbuildable (e.g., riparian buffers, steep slopes). We will probably do the latter, at a rate that we will determine later with the City. In either case, we will handle this constraint through the factor that we use to go from gross buildable land to net buildable land.

B.4.1.3.7. Open Space

Comprehensive Plan designations of Open Space–Agriculture are on OSU lands in the fringe area and are not currently within City limits with the following exceptions: (1) Kendal Farms which is now City Park land and should become Open Space-Conservation and (2) there is one OSU parcel south of the Philomath Highway and in the City Limits that has an Open Space–Ag *District* designation but a Comprehensive Plan designation of Public Institutional. During the 20-year period of this study, it is assumed that OSU will maintain the current amount of Agriculture land in Agricultural uses; thus, this land has no development potential.

Plan designations of Open Space–Conservation are placed on lands that contain drainageways, cemeteries, and most of the City's parks. It is not anticipated that this designation will be removed from these lands within the planning period. The designation permits limited development if on private lands, however, past experience indicates that when development surrounds these lands they are not urbanized. In addition, most of these designations are on lands that will also have development limitations due to their location in the City's drainageways. Thus, assume no development.[6]

B.4.1.3.8. Scenic Land

The Work Group originally recommended subtracting an additional 3% from the final estimate of buildable land to account for protection of scenic resources. But the other constraints may already largely account for scenic easements, and the policy basis for justifying the subtraction of an additional 3% for the land base is not strong. We recommend, instead, dealing with scenic issues, if at all, as a later adjustment to the build-out factor we will use (i.e., the percent of maximum allowable density, by type of zoning, that will be achieved by future development, on average, as vacant land with that zoning is used up).

---

[6]Unlike Open Space-Agriculture, Open Space-Conservation does not contain a corresponding District Designation. In addition many of the areas designated Open Space-Conservation are not parcel based designations (ex: Timberhill drainageways). Current mapping data has some very rough estimates of Open Space-Conservation areas, but this estimate has only been done on lands outside the City limits. Most lands with this designation within the City are within the hydric soil designations of Squaw Creek and Oak Creek and Timberhill. The data is not field verified and significant errors may exist.

B.4.1.3.9. Historic

Historic structures identified on the City and County land use maps will not constrain development on existing vacant lands. Archeological issues will not constrain development.[7]

B.4.1.3.10. Institutional Use

Most publicly owned parcels are parks, governmental, or public facilities and are considered unavailable for development. The exceptions are (1) the City-owned airport industrial park, which is leasable land intended for urbanization, and (2) the more-or-less developed area of land owned by OSU, which will almost certainly support future expansions that will accommodate employment and residences (group quarters).

B.4.1.4. REDEVELOPABLE LAND

Redevelopment Potential deals primarily with parcels with developed structures that are likely to be demolished and new buildings constructed in their place. Redevelopment Potential means all commercial, multi-family residential (District Designation RS-12 or RS-20), or industrial parcels, any of which is greater than 0.1 acres *and* have land values greater than improvement values *and* are not already classified as vacant or partially vacant. We agree that the issue raised about "improvement only accounts" is important and will attempt to deal with it. Not all, or even a majority of parcels that meet these criteria for redevelopment *potential* will be assumed to redevelop during the planning period.

Regarding the definition of what constitutes redevelopable land, we continue to recommend that we not get stuck on the definitions now. We will prepare a summary table that will show the amount of land in various categories of improvement-to-land-value. That way we can see how the numbers break first, and then define which categories to include in the estimate.

B.4.1.5. GROSS AND NET VACANT ACRES

A Gross Vacant Acre is an acre of vacant land before land has been dedicated for public right-of-way, private streets, or public utility easements. For example, a standard assumption is that about 20% of land in a subdivision is used for streets and utilities: if so, then a gross vacant acre will yield only about 35,000 sq. ft. (80% of a full acre) for lots. The factor we will use in this study for reducing gross to net residential acres is one that will

---

[7]The City staff suspect that there are archeological sites on vacant land in the UGB since archeological sites have been found nearby. The difficulty is that these sites are usually not discovered until the development process is underway. However, the City's Planned Development process permits density transfer and permits flexibility in development standards that can help address this issue should it arise. It is believed that only a small amount of land will be found to be impacted and that impacts will not be significant given the flexibility of the PD and given the State provisions that also address this issue.

come later from City staff based on their analysis of the last five years of subdivision permits.

A Net Vacant Acre is an acre of vacant land after land has been dedicated for public right-of-way, private streets, or utility easements. A net vacant acre has 43,560 square feet available for construction, because no further street or utility dedications are required: all the land is in lots.

B.4.2. METHODS FOR THE LAND SUPPLY ANALYSIS

This section summarizes the steps in the land supply analysis. It includes a proposed table structure that will facilitate a summary of land supply that can be cross-referenced geographically, by plan designation, and other variables. The general structure is based on the DLCD HB 2709 workbook, which specifically addresses residential lands. We'll use similar methods for commercial, industrial, and other lands.

As outlined in the Workbook, the steps and sub-steps in the supply inventory are:

1. Calculate the gross vacant acres by plan designation, including fully vacant and partially vacant parcels.

2. Calculate gross buildable vacant acres by plan designation by subtracting unbuildable acres from total acres.

3. Calculate net buildable acres by plan designation subtracting land for future public facilities from gross buildable vacant acres.

4. Calculate total net buildable acres by plan designation by adding redevelopable acres to net buildable acres.

Here is the proposed structure for the parcel database that we should have when we are done with the GIS overlays. For ease of presentation, the columns of the database (i.e., the fields) are listed below as bullet points (so don't mistake them as rows of the database; i.e., records). In other words, for each record (which probably means each parcel in the database) we would create the following fields:

A. Miscellaneous parcel attributes. Several fields: e.g., map and taxlot i.d., land use, zoning, land and improvement value

B. Parcel size (acres).

C. Building footprint (sq ft). This information is available for all parcels inside City limits.

D. Building? (Flag based on "C"). 'Y' if footprint > some minimum threshold value.

E. Footprint ratio (%, entered in lookup table as assumption). 'C' gives footprint. We need an assumption that tells us how much land for any

parcel is undevelopable because of the fact that it has a building on it. The ratio can be simple (e.g., multiply footprint by 2) or complex (e.g., find centroid of footprint on parcel, establish setbacks, etc.). We will use the factors described previously in the text.

F. Undeveloped area on parcel (acres). If D = yes, then F = 'B' – (C * E).

G. Potential buildable area on parcel (acres). Lookup assumptions about minimum residual to consider part of a partially developed parcel as buildable. Then insert either 'F' or some percentage of 'F'.

H. Constrained land (acres). Of G, how much has constraints that make it either unbuildable or reduce its density? Answer comes from GIS overlays: floodway, flood plain, wetlands, hazards, riparian, slopes (or water service zones). Need a union. LCOG would produce maps of all the constraints individually and combined. City amends and signs off. LCOG lays composite overlay on parcel base and potential buildable area (G).

I. Gross buildable land (acres). G – H.

J. Gross to net ratio (percent). Typically, 20–30% of gross buildable land is outside of lots (e.g., roads, transmission lines, parks, public, etc.).

K. Net buildable land (acres). (1 - I) * J

L. Improvement to land value (ratio). Go to 'A,' calculate, and report here. Use the ratio for subsequent sorting and reporting of Potentially Redevelopable Acres by improvement-to-land-value category: 'B' – 'G'

K gives net buildable land by type (since 'A' is really a multitude of parcel attributes; 'L' is one more attribute for reporting redevelopment potential). We can then sort by type and location to report subtotals.

Some of the data (e.g., public facilities) will be based on a community-level assumption and can be calculated in the database. Other data will be the result of GIS output based on layer intersections at the parcel or subparcel level. As long as each parcel has a unique identifier, aggregating from subparcels to parcels is not a problem.

B.5 DEMAND FOR BUILDABLE LAND, BY TYPE

Demand for land is characterized through analysis of national, regional, and local demographic and economic data. For residential uses, population and households drive demand. For the residential sector, for example, information about the characteristics of households is used to identify types of housing that will be affordable to area households. For non-residential uses, employment data is the primary driver of demand for land, and is used to estimate probable absorption rates for commercial and industrial lands.

B.5.1. POPULATION AND EMPLOYMENT FORECASTS

B.5.1.1. POPULATION

The City adopted a population projection that is anticipated to be 58, 461 by the year 2020. We have reviewed the additional material you sent regarding recent debates about the best forecasts of population for the City and Benton County. The County argues that it has issued around 1,000 building permits in the last five years, PSU population estimates and forecasts do not reflect that growth in unincorporated areas. If the County gets more population allocated to unincorporated areas while the County total stays the same, than population in incorporated areas (the great majority of which is in Corvallis) will have to decline. Meanwhile, the population forecasted for Corvallis for 2020 (a forecast made with 1995 as a base year), combined with the estimated population for Corvallis in 1997, implies that Corvallis will only grow at an average of 0.6% per year between now and 2020.

Our opinion is that the forecasts for both Benton County and Corvallis are probably low. It is unlikely that better forecasting techniques will be brought to bear on the issue, even if they were available.[8] More likely is that the issue will be resolved politically.

Our contract does not include forecasting either population or employment. We will work with whatever number the City decides on. In our final report, however, we will discuss the implications of having growth that is substantially greater (we agreed with City staff on 63,500 by 2020, from the City's 2020 Vision Statement). The way I expect to handle the issue, assuming that the lower forecast does not exhaust the supply of residential buildable land, would be to illustrate how much additional population the remaining residential buildable land in the UGB (i.e., the amount that remains after accommodating the new housing units demand by population growth to 58, 461, or whatever number the City decides on) could accommodate.

B.5.1.2. EMPLOYMENT

We have confirmed that no sector-level employment projections exist for Corvallis. A city-level projection was developed in 1990 as part of the Transportation Plan, but those numbers are out of date. We need a 20-year employment projection to estimate need for commercial and industrial land.

---

[8] We are on record in several other projects as saying that population forecasts are in part determined by public policy. Thus, if Corvallis were, for example, to decide that its highest priorities were environmental protection and having growth pay its full costs (assume, for this example, that paying full costs would mean greater development fees), then rising land prices and development costs could slow down growth. This kind of issue makes forecasting for small areas extremely difficult: most forecasting models I am aware of do not handle the issue explicitly; the few that try handle it qualitatively.

To develop the projections, we will review historic employment data for Benton County and Corvallis. We will apply a top-down methodology in developing the projections. We will develop a citywide projection based on review of historic data, regional and statewide employment projections, and interviews with the Region 4 economist.

The next step is to allocate employment by sector. We will begin with a review of employment by industry from the U.S. Census and Bureau of Economic Analysis (BEA). We also have 1997 employment figures for the ten largest employers in Corvallis. These 10 employers account for 47% of total employment in Benton County in 1997, and an estimated 75% of total employment in Corvallis. We will hand-allocate employment for the 10 largest employers to their respective sectors. That allocation could be improved if City staff could contact someone at these employers to get an idea about future plans for expansion, if any. For other sectors, we will develop ratios based on city and county averages. These will be applied to the 2020 citywide employment projection to develop sector-level employment projections for 2020.

B.5.2. DEMAND FOR RESIDENTIAL LAND

Accepted economic theory, as applied to real estate markets, is quite clear that the amount of housing built and purchased in a market is a function of demand factors (e.g., demand for housing by type, driven by number of households, incomes, preferences, and prices of alternatives), supply factors (e.g., the type and quality of the housing product, and the factors that influence the cost of that product and its substitutes), and prices (of the particular housing product and its substitutes by type, quality, and location). In short, though observed housing absorption results from the interaction of many factors, almost no forecasting models used in Oregon planning work that way. Rather, they forecast demand and supply independently, and rarely have even a qualitative (much less quantitative or modeled) analysis of prices.

There are two exceptions we are aware of. One is ODOT's work in progress on developing an integrated land use and transportation model for the Eugene/Springfield metropolitan area. This is a huge, state-of-the art project with a budget over 10 times that for the Corvallis project. The other is work done by Sonny Condor of Metro over the past several years to develop a housing forecasting model that explicitly considers household preferences (based on demographics) and prices.

We have worked with Condor before on this model. For this project he has agreed to help us adjust the model to make it applicable to the Corvallis project. In short, we are pleased to report that we will be able to piggyback on person-months of development work to supply Corvallis with a demand model that is well beyond what the scope of this project would normally allow. The model will allow us to forecast number of housing units by type (e.g., at least SF and MF) based on expected household characteristics

(primarily household size, age of household head, and income) while controlling for real housing prices.

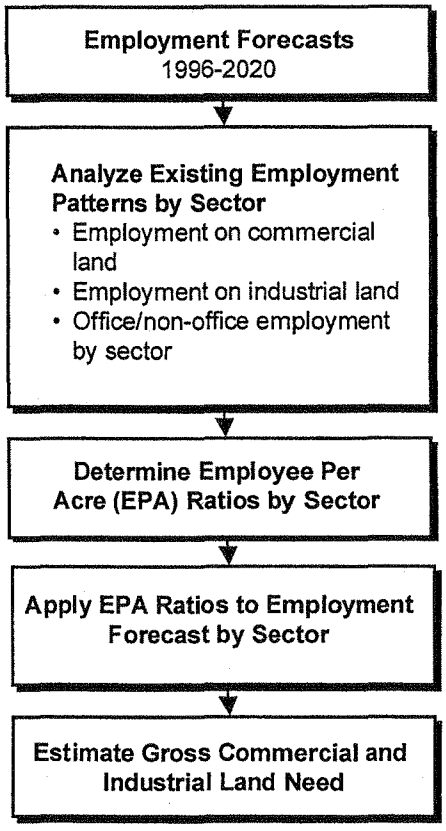
The output of the model will be a rough match of household types to dwelling types. As part of our Land Needs Report we will describe the structure and assumptions of the model.

B.5.3. DEMAND FOR COMMERCIAL AND INDUSTRIAL LAND

Several methods exist to determine industrial land need. The method most appropriate depends on the data available. Basic methods such as extrapolation of past development trends or ratios of industrial acres per employee or per total land area are appropriate for small communities where data are limited. These methods, however, only forecast land demand in the aggregate: they cannot provide reliable estimates by sector or type.

For larger communities that have better data sources, forecasting industrial land need is usually based on ratios of employee per land area (acre). This is the method that the Lane Council of Governments (LCOG) applied in the 1993 *Metropolitan Industrial Lands Inventory Report.* Figure 3 illustrates how we will develop estimates for demand for commercial and industrial lands .

Figure B-3: Steps in estimating commercial and industrial land demand



The basic steps in this analysis are:

- *Develop employment projections.* Based on historic data and regional and statewide projections, we will develop a sector-level employment projection for Corvallis.

- *Analyze existing employment patterns by sector.* This step is intended to determine the amount of industrial employment on non-industrial land, the amount of non-industrial employment on industrial land, and the ratio of office and non-office employment for various industrial sectors. We will review employment patterns and data for the Eugene/Springfield in this analysis.

- *Determine employee per acre ratios.* Few empirical analysis of employee per acre ratios exist. We propose to use a database of several LCOG files that would allow us to create an independent and more detailed estimate of these ratios. We are in the process of conducting a detailed analysis of these data which we will apply to Corvallis. If these figures prove unusable for this study, we propose to use the ratios LCOG used in their 1993 *Industrial Lands Inventory*, which are consistent with accepted standards.

- *Apply the ratios to employment forecasts by sector.* This step applies employment per acre ratios to changes in employment by sector between 1996 and 2020. The output of this analysis is an estimate of land demand by employment sector. As noted previously in the section on Supply, for the largest employers in Corvallis (including OSU and Hewlett-Packard) we will allocate employment by hand. For OSU, for example, even though its employment may be growing, it can probably be accommodated on land that we are not considering as part of the buildable land inventory anyway.

- *Determine aggregate demand for employment-supporting land.* This step divides the employment estimated in the previous step to that which is likely to locate on industrial and commercial (divided, to the extent possible, into office and retail) land, and that which is likely locate on non-industrial lands. The final result is an estimate of the demand for industrial, retail, and office land.

B.5.4. DEMAND FOR PUBLIC AND INSTITUTIONAL LAND

All things being equal, land used for public facilities such as schools, hospitals, governments, churches, parks, and other non-profit organizations will expand as population increases. Many communities have specific standards for parks. School districts typically develop population projections to forecast attendance and need for additional facilities.

With one exception, the assumptions applied to the supply analysis consider public and institutional lands unavailable to meet land needs for

residential, commercial, and industrial uses. The exception to this is that all non-aeronautical lands owned by the City surrounding the airport. The issue to consider is whether *additional* public and institutional land will be required over the analysis period.

For the purpose of this analysis, we propose to use the following assumptions regarding public and institutional lands:

- *OSU holds sufficient land for expansion over the analysis period.* Lands owned by OSU will not be considered available for other uses, and the University will not require additional land for expansion.

- *115 acres will be required for parks.* This is consistent with the assumption in the supply portion of this analysis.

- *Other public and institutional uses are covered by the gross to net acreage factor.* The supply analysis will assume that some percentage of buildable residential land (probably 20%-25%) will be required for public and institutional uses. This factor includes all public and institutional uses except OSU and park lands which are described above.

Appendix C

Population and Employment Forecasts

C.1 POPULATION FORECASTS

Table C-1 shows population projections for Oregon, Benton County, and Corvallis through 2020. While Oregon's population is expected to increase at an annual rate of about 1.3 percent during this period, increases in population in Benton County and Corvallis are forecast to average less than one percent annually through 2020.

Table C-1. Total population (estimated) for Oregon, Benton County, and Corvallis, 1995-2020

Year	Oregon	Benton County	Corvallis
1995	3,132,000	75,500	47,487
2000	3,409,000	79,291	49,503
2005	3,631,000	82,119	51,605
2010	3,857,000	85,080	53,796
2015	4,091,000	88,167	56,080
2020	4,326,000	91,345	58,461
Annual Growth Rate	1.3%	0.8%	0.8%

Source: Oregon Office of Economic Analysis, March 1998 (state and county), City of Corvallis (city population).
Annual Growth Rate = Average Annual Growth Rate

The analysis reported in this document did not include an independent forecast of population growth for Corvallis. The report works from two existing forecasts. We refer to the first forecast as the acknowledged forecast: it was accepted by the City Council in August 1997, and was based on the State Economist's forecast for Benton County.[1] The second comes the City's 2020 Vision Forecast. Both forecasts are for the year 2020.[2]

Independent of the inherent uncertainty in any long-run forecast, there are two definitional problems that must be addressed when using either of

[1] It assumes Corvallis will capture 65% of Benton County's population growth to 2020.

[2] All of the analysis presented in this chapter is based on the acknowledged forecast. Chapter 5 also discusses land need scenarios based on the 2020 vision forecast.

these forecasts: one deals with geography, the other with time. The geography problem is that the two forecasts were made for the *City of Corvallis*, not for the *Corvallis UGB*, which is the geography of interest in this study. The time problem is that though the two forecasts are both for 2020, they start from different base years (which is not our base of June 1996) and cover a 23- to 24-year period rather than the typical 20-year period of a land need and UGB analysis.

There are several considerations necessary to sort out the problems of geography. On the one hand, one could argue that by making a forecast for the City of Corvallis one is implicitly looking only at city limits, in which case the existing and future population that will locate in the urban fringe (between the city limits and the UGB) has been ignored. On the other hand, one could argue that the primary way that the City will be able to accommodate its forecast population is by expanding into the urban fringe; that such expansion will require annexation; and, therefore, the City forecast really includes growth in the urban fringe.

If the first argument were accepted, then one would have to increase both the baseline population estimate for 1996 to include the fringe, and the forecast (to include both the fringe population, and some increment in growth to the fringe). If the second argument is accepted, then no adjustments need be made to the forecast to deal with geographic definitions. Note that even in the first case the changes to the *increment* of population (i.e., in the amount of population growth that must be accommodated) may be small. The amount of population that exists *now* in the urban fringe would get added to both the 1996 base estimate and to the 2020, and would have no affect on the growth (the difference between 2020 and 1996 population).[3] Moreover, since much of the City's growth forecast is based on the presumption that buildable land will be available, and the majority of that land is in the urban fringe (as the next chapter demonstrates), clearly most of the growth in population in the urban fringe is already included in the forecast for the City.

Thus, for the purposes of this analysis, we accept the population forecast for the City as the same as a forecast for the UGB. This assumption will tend to understate population growth (assuming that the forecast for the City is correct in some absolute sense). Since we are considering a range of forecasts, and since growth in the urban fringe cannot occur in any significant way without urban services and annexation, we think this assumption is acceptable.

With regard to the issue of time, for the purposes of this report the forecasts are an estimate of the number of new residents that the City must accommodate over a 23–24 year period. A typical UGB analysis looks at a 20-year planning period. The data can be adjusted to approximate a 20-year period by either scaling back the forecast (to 2016), updating the supply information (to 1998), or both (1998-2018). Alternatively, one can simply

[3] Data from Claritas, Inc. estimates that 3,235 people lived in the urban fringe area in 1997.

work with a 24-year period: if there is sufficient land to accommodate 24 years of growth, then obviously 20 years of growth can be accommodated.

The preliminary analysis of demand and supply that we did while preparing this report led to the conclusion that there would be ample land inside the City's UGB to more than accommodate even the high 2020 forecast. From that we concluded that questions about whether to expand the UGB would not turn on whether the analysis, by using a longer analysis period than state law requires, had included more growth required. Thus, we chose to stay with 2020 as a forecast year. This choice, by itself, will tend to overstate the 20-year land need. We find this assumption acceptable because this report does not argue for a UGB expansion based on a finding of excess demand, and because any overstatement of demand based on timing is at least partially offset by any understatement of demand based on geography.

The population of Corvallis in 1990, according to the U.S. Census, was 44,757. The population of Corvallis in 1996, as estimated by the Center for Population Research and Census (CPRC), was 49,275. If one accepts the forecast of population in the City's acknowledged comprehensive plan (58,461 people in 2020), then the City must show it has land for new housing units that will accommodate 9,186 new people between 1996 and 2020.[4]

C.2 EMPLOYMENT FORECASTS

The demand for non-residential land in the Corvallis UGB is a function of future employment, the density of employment, and the specific type of employment on a given parcel. This section discusses the likely amount and composition of future employment.

No current employment estimates exist for the City of Corvallis. Moreover, no forecasts of employment exist for the City. The methodology typically used to estimate demand for non-residential land is based on employment projections. Because no published employment projections exist for Corvallis, we developed a simple projection.[5] Table 3-9 shows projected employment between 1995 and 2020 for Oregon, Benton County, and Corvallis. Our projections for Corvallis assume employment will increase at an annual rate of 1% between 1995 and 2020—a rate slightly higher than the County rate.

Preparing a reasonable employment projection for Corvallis is difficult. Because no city-level projection exists, one must consider county-level

---

[4] All population figures cited in this paragraph include population in Group Quarters, estimated to be 5,564 in 1990. That population should not be included in any forecast of households needing housing units. The great majority of this population is in OSU dorms and in health facilities. Our interviews suggested little growth expected for either of these populations. Thus, we assumed no change during the forecast in Group Quarter population. That simplifying assumption allows us to consider all the population growth during the forecast period (9,186) as population that will be in households requiring dwelling units.

[5] The work program for this report did not include the development of either employment or population projections.

forecasts as a control total. Two employment projections exist that include Benton County: county-level forecasts developed by the Office of Economic Analysis (OEA), and region-level forecasts developed by the Oregon Employment Department (OED).[6]

These forecasts are substantially different. The OEA forecasts employment in Benton County will grow at a rate of about 0.8% annually between 1995 and 2020, a rate consistent with OEA population forecasts. The OED forecasts for Region 4 indicate employment in the three-county region will increase at an annual rate of 2.9% between 1996 and 2006.

Table C-2. Projected total (non-agricultural) employment for Oregon, Benton County, and Corvallis, 1995-2020

Year	Oregon	Benton County	Corvallis
1995	1,416,900	33,164	30,255
2000	1,601,718	36,332	31,798
2005	1,718,659	38,051	33,420
2010	1,814,276	39,355	35,125
2015	1,882,653	40,055	36,917
2020	1,947,702	40,759	38,853
Annual Growth Rate	1.3%	0.8%	1.0%

Source: Oregon Office of Economic Analysis, March 1998 (state and county), ECONorthwest (city employment)

Table 3-10 shows 1996 and 2020 employment estimates by sector for Corvallis. The sector-level estimates are necessary because different sectors tend to use land at different intensities, and because it is desirable to estimate non-residential land demand by type (i.e., heavy industrial, light industrial, commercial, etc.).

Further complications arise with the OED forecasts. The OED forecasts are presented at the sector level, and include significant growth in the electronic equipment manufacturing and government sectors. However, our interviews with the top ten employers in Corvallis indicate that little, if any, growth will be generated by these employers.

The allocation of 1996 employment by sector was based on 1996 sector estimates for Benton County. The sector-level growth rate assumptions were based on review of county and state trends. The growth rate assumptions are based on an overall annual growth rate of 1.0%. To account for these inconsistencies, we hand-allocated the employment for these sectors shown in Table C-3.

[6] Region 4 includes Benton, Lincoln and Linn Counties.

Table C-3. Estimated employment by sector, Corvallis, 1996 and 2020

Sector	Emp (1996)	Percent (1996)	Annual Growth Rate (1996-2020)	Emp (2020)
Total Wage and Salary	30,558	100.0%	1.0%	38,853
Manufacturing	7,639	25.0%	0.6%	8,789
Lumber & Wood	611	2.0%	0.2%	641
Mach & Electric Equip	6,325	20.7%	0.5%	7,130
Other Durable	214	0.7%	2.0%	344
Food Products	92	0.3%	0.6%	106
Other Non-Durable	397	1.3%	1.5%	568
Non-Manufacturing	22,918	75.0%	1.1%	30,064
Ag, Forestry, Fishing	458	1.5%	0.5%	517
Mining	-	0.0%	0.0%	-
Construction	703	2.3%	1.3%	958
TC&U	642	2.1%	1.0%	815
Trade	4,584	15.0%	1.3%	6,221
Wholesale Trade	397	1.3%	1.4%	555
Retail Trade	4,156	13.6%	1.3%	5,666
Finance, Insurance, Real Estate	947	3.1%	1.5%	1,354
Services	6,417	21.0%	1.7%	9,617
Government	9,167	30.0%	0.6%	10,583

Source: Oregon Employment Department, estimates by ECONorthwest

Because detailed employment data have not been previously compiled by government agencies for Corvallis, we used information from the Eugene-Springfield metro area (1994) to estimate employee-per-acre (EPA) ratios.[7] As Table 3-10 shows, the EPA ratios vary substantially by sector. Manufacturing sectors tend to have lower EPAs than office-based sectors. Because we did not remove the vacant portions of partially-developed parcels and land in other non-employment based uses from the database, the EPA ratios presented here factor in inefficiencies in land uses.

The amount of building area (square feet) used per employee is a method of estimating needed building area, and, indirectly, land need. The building area per employee varies little among sectors.

[7] The data is based on research previously conducted by ECONorthwest and the Lane Council of Governments. The data sources include the Bureau of Economic Analysis (BEA) 202 tapes and Lane County assessment data for the area. The data are based on 5,265 employers that employ over 95,000 persons. This accounts for more than 95% of the non-agricultural employment in the area.

Table C-4. Floor area and employee per acre ratios in the Eugene/Springfield area, 1994

Division Title	Emp	Floor Area	Total Acres	Sq Ft/Emp	EPA	Std. Dev.
Agriculture, Forestry, and Fishing	1,058	742,169	205.5	701	5.1	80.3
Mining	86	67,941	14.5	790	5.9	11.5
Construction	3,820	2,887,433	592.9	756	6.4	42.1
Manufacturing	13,772	10,771,429	1,097.3	782	12.6	213.4
Transportation, communications, and utilities	4,918	3,073,249	727.6	625	6.8	165.4
Wholesale trade	4,991	4,767,104	606.8	955	8.2	80.3
Retail trade	20,372	13,742,096	961.1	675	21.2	125.0
Finance, insurance, and real estate	4,486	2,362,096	200.3	527	22.4	236.1
Services	36,966	23,991,949	2,547.2	649	14.5	212.8
Public Administration	4,539	3,714,190	376.5	818	12.1	221.5
Total	95,008	66,119,656	7,329.7	696	13.0	

Source: BEA 202 data, Lane County Assessor, LCOG, analysis by ECONorthwest.

The last column of Table C-4, Standard Deviation, provides a measure of how much variability (a lot) there is around the estimates of EPAs in the previous column. The reason is easy to explain with an example. Manufacturing includes manufacturers with several employees, perhaps working two shifts, in a small building (high EPA), and a warehousing operation with a yard for vehicles and space for expansion that might have only a few employees on site (low EPA). There is no simple method to narrow the variability in the data available. We work with averages and assume that though they will almost certainly be off for any particular business and parcel, the land demand estimates will be approximately right in the aggregate.

Appendix D

Demographic and Socioeconomic Data

Any planning analysis conducted toward the end of a decade is complicated by the fact that the most comprehensive source of socioeconomic and demographic data—the U.S. Census—is out of date. In this study, for example, we must find ways to extrapolate from 1990 to 1998. Other sections of this report describe various ways those extrapolations have been made.

One method often used is to purchase data from businesses that specializes in making those extrapolations. Claritas is such a business. On the pages that follow are tables of data that ECONorthwest purchased for this project. They are referenced in Chapter 3, Demand. Area 1 refers to the Corvallis city limits. Area 2 is an approximation of the Urban Growth Boundary.

Marketview Comparison Report

The Marketview Report format provides data for up to three study areas on the same report for easy analysis. The report combines Claritas's annually updated estimates of population, households, income, and age with other special Claritas estimates and projections as well as key data from the *1990 Census of Population and Housing.*

This document includes:

- List of 1990 Census definitions for the terms used in the report.
- Description of the consumer expenditure terms appearing on page 8 of the report.
- Description of the "population pyramids" found on the last three pages of the report.

Detailed information on the methodology used by Claritas Inc. to determine current-year estimates and five-year projections is available. To obtain a copy, contact Claritas Technical Support at 800-780-4237.

You can get Marketview Report information for various geographic areas such as Census defined boundaries (block groups, census tracts, MCDs, counties, states, MSAs, and places), ZIP codes, or media defined boundaries (DMAs, CableTrack areas and Yellow Pages directory areas). Furthermore, the software used to produce the Marketview Report permits data for any standard geographies to be aggregated, as specified by the user, in virtually any geographic or geometric combination, including rings and custom polygons.

Note that certain tables in the Marketview Report are distributions which include percentages. The universe (denominator) on which each set of percentages is determined is the number at the top of the column, which has a "%" to its right.

Attribute	Area 1		Area 2		Area 3	
1990 Population by Race/Hispanic	229935	%	112836	%	65430	%
White (not Hispanic).....	183825	79.9	73076	64.8	58369	89.2
Black (not Hispanic).....	26900	11.7	22959	20.3	4554	7.0
Asian (not Hispanic).....	7248	3.2	4688	4.2	802	1.2
All Other (not Hispanic).....	979	0.4	499	0.4	279	0.4
Hispanic Origin.....	10983	4.8	11614	10.3	1426	2.2

If you need clarification on any information in this report, please call the Technical Support Department at (800) 780-4237.

1990 CENSUS DEFINITIONS

The following definitions are derived from the complete *Technical Documentation, Census of Population and Housing 1990: Summary Tape Files 1 and 3*. The terms are arranged alphabetically.

AGE pages 1 & 2

Age at last birthday, i.e., number of completed years from birth to April 1, 1990, based on replies to questionnaire item 5 on year of birth on the 1990 Census form, or based on the estimated date of birth for persons born since April 1, 1990.

AVERAGE HOUSEHOLD SIZE page 1

A measure obtained by dividing the number of persons in households by the number of households. A household includes all the persons who occupy a housing unit. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live and eat separately from any other persons in the building and which have direct access from the outside of the building or through a common hall.

EDUCATION page 5

Persons 25 years and older are classified according to the highest level of school completed or highest degree received. Schooling completed in foreign or ungraded school systems are reported as the equivalent level of schooling in a regular U.S. system. The "High School Graduate" category includes those who passed the Test of General Educational Development (G.E.D.), and did not attend college. The "Graduate or Professional Degree" category includes degrees such as MA, MS, MBA, MD, DDS, and JD, and excludes degrees from barber school, cosmetology and other training for a specific trade.

FAMILY pages 1 & 5

Two or more persons, including the householder, who are related by birth, marriage, or adoption and who live together as one household. All such persons are considered as members of one family. A person maintaining a household alone, or with unrelated persons, is regarded as a household only, not as a family. Thus, some households do not contain families.

FAMILY HOUSEHOLD INCOME page 2 & 3

Total money income received in the stated calendar year by all members age 15 years and older in a family household. A "family household" includes related family members as well as non-related persons living with them. The income is presented in terms of current dollars for the particular year in question.

GROUP QUARTERS pages 1 & 5

All persons not living in households are classified as living in group quarters. Two general categories of persons in group quarters are recognized: (1) institutionalized persons and (2) other persons in group quarters (also referred to as "non-institutional group quarters"). Institutionalized persons include those living in correctional institutions, nursing homes, mental hospitals, and other institutions. Non-institutionalized persons include those living in college dorms, military quarters, homeless shelters and those in visible street locations, as well as residents of housing units with 10 or more unrelated persons.

HOUSEHOLD pages 1-4

A housing unit occupied by one or more persons. (See average household size)

HOUSEHOLD INCOME pages 2 & 3

Total money received in the stated calendar year by all household members 15 years old and over, tabulated for all households. Household income differs from family household income by including income from all persons age 15 years and older in all households, including persons living alone and other non-family households. The income is presented in terms of current dollars for the particular year in question.

HOUSEHOLD WEALTH page 3

Household wealth is a measure of financial well-being by net worth of households, or assets minus debts. Income data deals with only one dimension of financial well-being: income. Assets include such items as savings accounts, certificates of deposits, money market funds, stocks, bonds, mutual funds, real estate, the value of a business, motor vehicles, etc. Debts include such items as mortgages, credit card and retail store credit accounts, bank loans, etc. The basis for estimates for wealth is the Market Audit database, which is created from Claritas' continuing, comprehensive telephone surveys of more than 90,000 households per year.

HOUSEHOLD TYPE pages 4 & 5

Households are classified by type according to the sex of the householder and the presence of relatives, based on questions asked on sex and household relationship:

- **Male no wife no child** - Other family, male householder with no wife and no children under age 18.
- **Female no husband no child** - Other family, female householder with no husband and no children under age 18.
- **Married-couple family** - A family in which the householder and his/her spouse are enumerated as members of the same household.
- **Other family household own child** - A male or female householder and child with no spouse of householder present. Own child refers to a never-married child under the age of 18 who is a son, daughter, stepchild, or adopted child of the householder.
- **Nonfamily household** - A household consisting of a person living alone or of a householder living with unrelated persons.
- **Family household** - A household with persons related by birth, marriage, or adoption. The householder and all persons in the household related to him or her are family members. A family household may also include nonrelatives living with the family.

HOUSEHOLDER page 4

The person or one of the persons in whose name the home was owned or rented. If there was no such person, any adult household member at least 15 years old and over could be designated as the householder.

INDUSTRY - EMPLOYED POPULATION page 6

The kind of business or industrial activity in which the person was employed or if not employed, in which the person was most recently employed. Persons working at more than one job were instructed to describe the one at which they worked the most hours during the reference week. If the employer was engaged in more than one activity, the respondent was instructed to describe only the major activity at the place or facility where the person worked. Only civilian employees are counted, not those in the Armed Forces.

LABOR FORCE STATUS page 6

Persons 16 years old and over were classified as to their status in the labor force based on replies to several questions relating to work activity and status during the reference week. Persons determined as not being in the labor force consist mainly of students, housewives, retired workers, seasonal workers enumerated in an "off season" who were not looking for work, inmates of institutions, disabled persons, and persons doing only incidental unpaid family work (fewer than 15 hours during the reference week). Also included are so called "discouraged workers" who did not have a job and have not been actively looking for work during the last four weeks.

MARITAL STATUS page 5

Marital status data are tabulated only for persons 15 years old and over. Couples who live together (unmarried persons, persons in common-law marriages, etc.) were allowed to report the marital status they considered the most appropriate. The following categories are tabulated:

- **Never married -** All persons who have never been married or whose only marriage was annulled.
- **Married** (not separated) - Persons whose current marriage has not ended through widowhood, divorce, or separation (regardless of previous marital history). The category may also include couples who live together or persons in common-law marriages if persons in these living situations so classified themselves.
- **Separated -** Persons legally separated or otherwise absent from their spouse because of marital discord. Separated includes persons who have been deserted and persons with a limited divorce.
- **Divorced -** Includes persons legally divorced and not remarried.
- **Widowed -** Widows and widowers who have not remarried.

OCCUPANCY STATUS pages 6 & 7

- **Occupied -** The classification of a housing unit with one or more persons living in the unit as a usual residence when enumerated, or only temporarily absent from the unit (for example, on vacation). A household consists of all the persons who occupy a housing unit. Therefore, counts of households and occupied housing units should match.
- **Vacant -** The classification of a housing unit with no one living in it at the time of enumeration, unless its occupants are only temporarily absent. If, at the time of the enumeration, the unit is temporarily occupied entirely by persons who have a usual residence elsewhere, it is also classified as vacant.
- **Owner-occupied -** Reported as "owned or being bought" by someone in the household even if the unit is mortgaged or not fully paid for.

- **Renter-occupied** - All occupied housing units which are not owner-occupied, regardless of whether or not cash rent is paid by a member of the household.

OCCUPATION page 5

The kind of work the person was doing at a job or business during the reference week, or if not at work, at the most recent job or business. Persons working at more than one job were instructed to describe the one at which the person worked the most hours during the reference week.

OWN CHILD page 4

A never-married child under 18 years who is a son, daughter, stepchild, or adopted child of the householder.

PER CAPITA INCOME page 2

Per capita income is the mean income for the stated year computed for every man, woman, and child in a particular area. It is derived by dividing the total income of a particular area by the total population (including group quarters) in that area. The income is presented in terms of current dollars for the particular year in question.

RACE page 1 & 2

Race information is presented in two different ways on the Marketview report, to allow a choice in analyzing the Hispanic population. Hispanic origin is considered an ethnicity and not a race; persons of Hispanic origin may be of any race.

Race/Ethnicity Categories

Census	MARS/OMB
Non-Hispanic	RACE
• White	• White
• Black	• Black
• American Indian/ Eskimo/Aleut	• American Indian/ Eskimo/Aleut
• Asian/Pacific Islander	• Asian/Pacific Islander
• Other	ETHNICITY
Hispanic	Hispanic

The race information on page 1 of the Marketview report shows population by non-Hispanic race categories plus a separate count for Hispanics. The sum of each of the non-Hispanic race categories (e.g. White (not Hispanic), Black (not Hispanic), etc.) plus the Hispanic count equals the total population; there is no double-counting of persons.

The race information on page 2 shows population for four race groups which have been made OMB-consistent, plus a count for Hispanic population.

OMB (Office of Management and Budget) consistent race categories redistribute persons who identified themselves as "Other race" into a specific race category: either White, Black, Asian or American Indian. These race categories include Hispanics, therefore the counts for White and Black on page 2 will usually be higher than those on page 1, because Hispanics are counted both in the race categories as well as the separate Hispanic count on Page 2.

RENT page 7

Gross monthly rent is reported for "specified renter-occupied housing units" (renter-occupied units, excluding one-family homes on 10 or more acres of land.) The rent is the monthly cash amount agreed to regardless of any furnishings, utilities, fees, meals or services that may be included.

TRANSPORTATION TO WORK, MEANS OF page 6

The principal means of travel or type of conveyance usually used in traveling from home to work. If more than one means of transportation was used, the respondent was instructed to report the one usually used for most of the distance.

TRAVEL TIME TO WORK page 6

Travel time to work refers to the total number of minutes that it usually took the worker to get from home to work (one way) during the Census reference week. Travel time includes time spent waiting for public transportation, picking up passengers in carpools, etc.

UNITS IN STRUCTURE page 7

A structure is a separate building that either has open spaces on all sides or is separated from other structures by dividing walls that extend from ground to roof. All units within the structure, whether occupied or vacant, are counted. Stores and office space are excluded.

- **Single Detached Unit** - a 1-unit structure detached from any other house (i.e. with open space on all four sides).
- **Single Attached Unit** - a 1-unit structure that has one or more walls extending from ground to roof separating it from adjoining structures (for example, town houses or row houses, if the dividing wall goes from ground to roof).

VACANT HOUSING UNITS page 6

Prior to the 1990 Census, data for vacant housing units were only reported for year-round units. Vacancy status now is reported for all housing units, including: units for rent and/or sale; units for seasonal, recreational or occasional use; and units intended for use by migratory workers.

VALUE page 6

The respondent's estimate of the dollar worth of the property, including the house and the lot on which it stands, for specified owner-occupied housing units. Specified owner-occupied housing units EXCLUDE:

- Units on 10 or more acres
- Units in multi-unit buildings
- Units with a business or medical office on the property
- Mobile homes or trailers
- Renter-occupied and vacant units

VEHICLES AVAILABLE page 7

The total number of automobiles, vans, and light trucks (one ton or less) available for the use of members of the household. Company cars, including police cars and taxis, are included if kept at home and used for non-business purposes. Cars or trucks permanently out of working order are excluded. The data show vehicles available for use, not vehicles privately owned.

YEAR MOVED INTO UNIT page 7

The year of the householder's latest move into the housing unit. Respondents who had moved back into a unit they had previously occupied were asked the year of the most recent move, as were those who moved from one apartment to another in the same building. This item also includes those who, living in a mobile home, moved from one location to another in the same mobile park.

YEAR STRUCTURE BUILT page 7

The year the original construction of the building was completed (not the date of any later remodeling, addition, or conversion). This item was ascertained for occupied and vacant housing units. For mobile homes, trailers, and houseboats, the manufacturer's model year is assumed to be the year built.

CURRENT ESTIMATES OF CONSUMER EXPENDITURES BY SELECTED PRODUCT GROUP AND RETAIL STORE TYPE

Page 8 of the Marketview Report contains information for 24 product groupings and 15 general retail store types. Definitions of the store types are consistent with those provided with the documentation accompanying the Bureau of the Census' *Census of Retail Trade,* Merchandise Line Sales.

The aggregate expenditure data by product category is created using Claritas' proprietary Consumer CLOUT methodology. Further details on this methodology are available upon request. The aggregate expenditure data by store type is the result of combining appropriate product categories into a "store type" based on information relating product categories to store type found in the Merchandise Line Sales portion of the *Census of Retail Trade.*

The "U.S. Index" information provided is a ratio of the average household expenditure for the particular study area compared to the average household expenditure for the U.S. total for the particular product category or store type. The number presented for the U.S. index in the Marketview Report is the actual ratio multiplied by 100. Thus a value of "100" means that the average for the study area is the same as the average for the U.S. A value above 100 means that the average for the study area is greater than the U.S. average, a value below 100 means the average for the study area is under the U.S. average.

PYRAMID GRAPHS OF POPULATION BY AGE AND HOUSEHOLDS BY INCOME

The graphs appearing on pages 9 through 11 of the Marketview Report are usually referred to as population pyramids. A population pyramid is a graph designed to show what various parts of a distribution, such as population by age or households by income, look like with respect to other parts of that same distribution or other distributions.

A traditional population by age pyramid has one line for each single year of age. The population pyramids presented in this report are compressed into fewer age ranges. Furthermore, the widths of the ranges for a given pyramid are not necessarily equal. For example, some age ranges in the pyramids on pages 9 and 10 are five years wide and some are ten years wide. The top range (85+) for these pyramids is open ended.

The population pyramid on page 9 (figure 1 below) compares the male and female populations by age for each of the study areas. For ease of identification, the male half of the pyramid uses the letter "m" to show how many males there are and the female half uses the letter "f". Care must be taken when comparing the successive pyramids on page 9 because the total number of persons represented by each pyramid can be different. Accordingly, the number of persons represented by each "m" or "f" in these pyramids is a function of the population totals for the pyramids.

Figure 1

```
Marketview Comparison Report (Page  9 of 11)
Claritas, Inc.                                                    22-MAY-97
Sales (800) 234-5973                                Support  (800) 234-5629
                    1997 Male and Female Population Comparison
      Males                          Age                          Females
   ---------                      ---------                      ---------
       146                    |    85+    |                          423
       666                    |   75-84   |f                        1359
      2061                 mm |   65-74   |ff                       2641
      5670             mmmmmm |   55-64   |fffff                    5126
     13700 mmmmmmmmmmmmmmmmm |   45-54   |fffffffffffff            12623
     10686      mmmmmmmmmmmm |   40-44   |fffffffffff              10325
     11316     mmmmmmmmmmmmm |   35-39   |ffffffffffff             11132
     12399    mmmmmmmmmmmmmm |   30-34   |fffffffffffff            11886
     11802     mmmmmmmmmmmmm |   25-29   |ffffffffffff             11214
      9776        mmmmmmmmmm |   20-24   |fffffffff                 8551
      8265        mmmmmmmmmm |   15-19   |fffffffff                 7767
      9603        mmmmmmmmmm |   10-14   |fffffffff                 8805
     10440       mmmmmmmmmmm |    5-9    |ffffffffff                9710
     11134       mmmmmmmmmmm |     <5    |ffffffffffff             10709
```

The population pyramids on page 10 (figure 2 next page) compare the total population (males and females combined) by age of each study area with each of the other study areas. The comparison is done in terms of the PERCENT in each age group. The comparison in terms of percentages is necessary because the population of two study areas may be vastly different. By using percent as the measure, the age profiles of two different study areas can be compared graphically even though the size of the populations of the two areas can be vastly different. For example, one could not meaningfully compare numbers of persons by age for a single ZIP Code

and the U.S. total on the same pyramid. However, comparing percents, as shown in the pyramids on page 10, can communicate meaningful information.

Figure 2

Marketview Comparison Report (Page 10 of 11)

1997 Total Population Comparison (%)

Area 1		Age		Area 2
0.2	|	85+	|2	1.3
0.9	|	75-84	|222	3.3
2.0	11|	65-74	|222222	5.8
4.7	1111|	55-64	|2222222	6.9
11.4	111111111111|	45-54	|22222222222	11.1
9.1	111111111|	40-44	|222222222	8.8
9.8	1111111111|	35-39	|2222222222	10.0
10.6	11111111111|	30-34	|222222222222	12.0
10.0	1111111111|	25-29	|222222222222222	14.2
8.0	11111111|	20-24	|222222222	9.4
7.0	1111111|	15-19	|222	3.8
8.0	11111111|	10-14	|222	3.6
8.8	111111111|	5-9	|2222	4.1
9.5	1111111111|	<5	|222222	5.7

Page 11 (figure 3 below) of the Marketview Report presents pyramids which compare the income distributions of each study area with each of the other study areas. Similar to the pyramids on page 10, the comparison is of percentages. In this case, we compare the percentage of households with income in a given range. The pyramids show data for study area 1 with the character "1", for study area 2 with "2" and for study area 3 with "3".

Figure 3

Marketview Comparison Report (Page 11 of 11)

1997 Households by Household Income (%):
(income ranges in thousands of dollars)

Area 1		HH inc		Area 2
2.0	|	$150+	|2	3.9
9.3	1111|	$100-$150	|2222	8.5
15.5	1111111|	$ 75-$100	|22222	10.8
31.2	111111111111111|	$ 50-$ 75	|22222222222	23.6
20.2	111111111|	$ 35-$ 50	|2222222222	21.5
6.0	11|	$ 30-$ 35	|222	7.5
4.7	11|	$ 25-$ 30	|222	6.2
3.8	1|	$ 20-$ 25	|22	5.7
4.8	11|	$ 10-$ 20	|222	7.0
2.5	1|	<$10	|22	5.2

Note: All the pyramids use different symbols (m, f, 1, 2 and 3) on each side of the pyramid. Visually, this can influence your perception of what is being communicated. The m's look more dense than the f's, and the 2's and 3's look denser than the 1's. This effect should be kept in mind when studying the pyramids so that the different densities do not mislead you.

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237
Area 1 = CORVALLIS, OR
Area 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Attribute		Area 1		Area 2	
Population:	2002 Total.....	49014		52555	
	1997 Total.....	47043		50278	
	1990 Total.....	44757		47518	
	1980 Total.....	42765		45192	
	% Change 90-97.....	5.1		5.8	
	% Change 80-90.....	4.7		5.1	
Households:	2002 Total.....	18769		19992	
	1997 Total.....	17925		19037	
	1990 Total.....	16743		17699	
	1980 Total.....	15245		16064	
	% Change 90-97.....	7.1		7.6	
	% Change 80-90.....	9.8		10.2	
Av. HH Size:	2002.....	2.31		2.35	
	1997.....	2.31		2.35	
	1990.....	2.30		2.33	
1997 Group Quarters Population..		5564		5551	
Families:	2002 Total.....	9836		10807	
	1997 Total.....	9489		10383	
	1990 Total.....	8996		9774	
	% Change 90-97.....	5.5		6.2	
Housing Units:	2002 Total.....	19352		20605	
	1997 Total.....	18482		19624	
	1990 Total.....	17307		18291	
1997 Population by Race/Hispanic		47043	%	50276	%
White (not Hispanic).....		40082	85.2	43170	85.9
Black (not Hispanic).....		652	1.4	667	1.3
Asian (not Hispanic).....		4396	9.3	4443	8.8
All Other (not Hispanic).....		291	0.6	332	0.7
Hispanic Origin.....		1622	3.4	1664	3.3
1997 Pop. by Age:		47043	%	50278	%
Under 5 Years.....		2645	5.6	2854	5.7
5 to 9 Years.....		2558	5.4	2760	5.5
10 to 14 Years.....		2431	5.2	2733	5.4
15 to 19 Years.....		4896	10.4	5161	10.3
20 to 24 Years.....		7736	16.4	7857	15.6
25 to 29 Years.....		3850	8.2	4015	8.0
30 to 34 Years.....		3844	8.2	3979	7.9
35 to 39 Years.....		3721	7.9	4003	8.0
40 to 44 Years.....		3348	7.1	3671	7.3
45 to 54 Years.....		4966	10.6	5553	11.0
55 to 64 Years.....		2563	5.4	2932	5.8
65 to 74 Years.....		2170	4.6	2398	4.8
75 to 84 Years.....		1596	3.4	1648	3.3
85 Years and Over.....		719	1.5	698	1.4
Total Median Age (in Years)...		29.2		29.7	
Male Median Age (in Years)....		27.6		28.1	

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237
Area 1 = CORVALLIS, OR
ea 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Attribute	Area 1		Area 2	
1997 Females by age:(see pp.9-10)	23172	%	24763	%
Under 5 years	1300	5.6	1400	5.7
5 to 9 years	1230	5.3	1320	5.3
10 to 14 years	1171	5.1	1314	5.3
15 to 19 years	2350	10.1	2474	10.0
20 to 24 years	3360	14.5	3422	13.8
25 to 29 years	1772	7.6	1864	7.5
30 to 34 years	1777	7.7	1850	7.5
35 to 39 years	1887	8.1	2027	8.2
40 to 44 years	1672	7.2	1841	7.4
45 to 54 years	2491	10.8	2788	11.3
55 to 64 years	1355	5.8	1542	6.2
65 to 74 years	1292	5.6	1405	5.7
75 to 84 years	974	4.2	989	4.0
85 years and over	541	2.3	527	2.1
Female Median age (in years)	31.1		31.6	
1997 White population by age:	41517	%	44634	%
White under 5 years	2270	5.5	2478	5.6
White 5 to 17 years	5606	13.5	6266	14.0
White 18 to 44 years	22149	53.3	23213	52.0
White 45 to 64 years	7063	17.0	7988	17.9
White 65 years and over	4429	10.7	4689	10.5
1997 Black population by age:	716	%	751	%
Black under 5 years	80	11.2	86	11.5
Black 5 to 17 years	128	17.9	138	18.4
Black 18 to 44 years	455	63.5	469	62.5
Black 45 to 64 years	51	7.1	56	7.5
Black 65 years and over	2	0.3	2	0.3
1997 Hispanic population by age:	1622	%	1681	%
Hispanic under 5 years	157	9.7	161	9.6
Hispanic 5 to 17 years	329	20.3	345	20.5
Hispanic 18 to 44 years	1007	62.1	1034	61.5
Hispanic 45 to 64 years	120	7.4	131	7.8
Hispanic 65 years and over	9	0.6	10	0.6
Per capita inc.: 1997	$17213		$17769	
1989 (Census)	$11815		$12152	
% Change 89-97	45.7		46.2	
Avg. hhld inc.: 1997	$43718		$45600	
1989 (Census)	$30095		$31249	
% Change 89-97	45.3		45.9	
Med. hhld inc.: 1997	$31648		$32607	
1989 (Census)	$23196		$24148	
% Change 89-97	36.4		35.0	
Med. Family HH inc.: 1997	$48146		$49908	
1989 (Census)	$34816		$35766	
% Change 89-97	38.3		39.5	

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237
Area 1 = CORVALLIS, OR
Area 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Attribute	Area 1		Area 2	
1997 Average Household Wealth...	$106274		$112835	
1997 Median Household Wealth....	$22027		$23683	
1997 Households by Hhld Income:.	17925	%	19037	%
(See pg.11) Under $10,000.....	3009	16.8	3079	16.2
$ 10,000 to $ 19,999.....	3075	17.2	3195	16.8
$ 20,000 to $ 24,999.....	1285	7.2	1333	7.0
$ 25,000 to $ 29,999.....	1157	6.5	1187	6.2
$ 30,000 to $ 34,999.....	1053	5.9	1123	5.9
$ 35,000 to $ 49,999.....	2668	14.9	2776	14.6
$ 50,000 to $ 74,999.....	2922	16.3	3158	16.6
$ 75,000 to $ 99,999.....	1355	7.6	1529	8.0
$100,000 to $149,999.....	1079	6.0	1274	6.7
$150,000 and Over.....	322	1.8	378	2.0
1990 Hholds by 1989 hhld income:	16743	%	17699	%
Under $10,000.....	4118	24.6	4209	23.8
$ 10,000 to $ 19,999.....	3331	19.9	3441	19.4
$ 20,000 to $ 24,999.....	1344	8.0	1404	7.9
$ 25,000 to $ 29,999.....	1177	7.0	1235	7.0
$ 30,000 to $ 34,999.....	1274	7.6	1308	7.4
$ 35,000 to $ 49,999.....	2432	14.5	2629	14.9
$ 50,000 to $ 74,999.....	1981	11.8	2214	12.5
$ 75,000 to $ 99,999.....	658	3.9	760	4.3
$100,000 to $149,999.....	352	2.1	385	2.2
$150,000 and Over.....	76	0.5	110	0.6
1997 Fam. HHs by Fam. Hhld Inc.:	9489	%	10383	%
Under $10,000.....	640	6.7	662	6.4
$ 10,000 to $ 19,999.....	813	8.6	890	8.6
$ 20,000 to $ 24,999.....	484	5.1	536	5.2
$ 25,000 to $ 29,999.....	542	5.7	579	5.6
$ 30,000 to $ 34,999.....	604	6.4	659	6.3
$ 35,000 to $ 49,999.....	1818	19.2	1872	18.0
$ 50,000 to $ 74,999.....	2180	23.0	2396	23.1
$ 75,000 to $ 99,999.....	1103	11.6	1254	12.1
$100,000 to $149,999.....	998	10.5	1177	11.3
$150,000 and Over.....	307	3.2	355	3.4
1990 Fam. HH by 1989 Fam. HH Inc	8996	%	9774	%
Under $10,000.....	849	9.4	882	9.0
$ 10,000 to $ 19,999.....	1180	13.1	1290	13.2
$ 20,000 to $ 24,999.....	806	9.0	848	8.7
$ 25,000 to $ 29,999.....	767	8.5	799	8.2
$ 30,000 to $ 34,999.....	924	10.3	933	9.5
$ 35,000 to $ 49,999.....	1806	20.1	1998	20.4
$ 50,000 to $ 74,999.....	1642	18.3	1836	18.8
$ 75,000 to $ 99,999.....	623	6.9	728	7.4
$100,000 to $149,999.....	331	3.7	354	3.6
$150,000 and Over.....	68	0.8	102	1.0

NOTE: When median household wealth is < $25,000 it will be listed as $24,999.

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237
Area 1 = CORVALLIS, OR
Area 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Attribute	Area 1		Area 2	
1997 Households by Hhold Wealth:	17925	%	19060	%
Less than $25,000.....	9529	53.2	9776	51.4
$ 25,000 to $ 49,999.....	1409	7.9	1494	7.8
$ 50,000 to $ 99,999.....	1946	10.9	2114	11.1
$100,000 to $249,999.....	2818	15.7	3128	16.4
$250,000 to $499,999.....	1423	7.9	1609	8.5
$500,000 and Over.....	800	4.5	916	4.8
1997 Householders by Age:	17925	%	19060	%
15 to 24 Years.....	3061	17.1	3072	16.1
25 to 34 Years.....	4070	22.7	4220	22.1
35 to 44 Years.....	4086	22.8	4383	23.0
45 to 54 Years.....	2692	15.0	2980	15.6
55 to 64 Years.....	1383	7.7	1586	8.3
65 to 74 Years.....	1283	7.2	1415	7.4
75 Years and Over.....	1350	7.5	1404	7.4
1997 Households by Hhold Inc:				
Age of Hholder 25-44 Years:	8156	%	8603	%
Under $15,000.....	1626	19.9	1672	19.4
$ 15,000 to $ 24,999.....	1214	14.9	1288	15.0
$ 25,000 to $ 34,999.....	1201	14.7	1232	14.3
$ 35,000 to $ 49,999.....	1513	18.6	1562	18.2
$ 50,000 to $ 74,999.....	1482	18.2	1609	18.7
$ 75,000 to $ 99,999.....	620	7.6	675	7.8
$100,000 and Over.....	500	6.1	565	6.6
Age of Hholder 45-64 Years:	4075	%	4566	%
Under $15,000.....	396	9.7	432	9.5
$ 15,000 to $ 24,999.....	393	9.6	416	9.1
$ 25,000 to $ 34,999.....	421	10.3	460	10.1
$ 35,000 to $ 49,999.....	616	15.1	658	14.4
$ 50,000 to $ 74,999.....	985	24.2	1082	23.7
$ 75,000 to $ 99,999.....	573	14.1	663	14.5
$100,000 and over.....	691	17.0	855	18.7
Age of Householder 65+ Years:	2633	%	2819	%
Under $15,000.....	779	29.6	806	28.6
$ 15,000 to $ 24,999.....	441	16.7	469	16.6
$ 25,000 to $ 34,999.....	323	12.3	351	12.5
$ 35,000 to $ 49,999.....	382	14.5	408	14.5
$ 50,000 to $ 74,999.....	363	13.8	380	13.5
$ 75,000 to $ 99,999.....	143	5.4	173	6.1
$100,000 and Over.....	202	7.7	232	8.2
1990 Households by Hhold Type:	16823	%	17805	%
Male no Wife no Child.....	173	1.0	177	1.0
Female no Husband no Child....	401	2.4	421	2.4
Married Couple Family.....	7594	45.1	8324	46.8
Other Family Hhold Own Child..	1009	6.0	1055	5.9
Non-Family.....	7646	45.4	7828	44.0

1997 estimates and 2002 projections produced by Claritas Inc.

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237
Area 1 = CORVALLIS, OR
Area 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Attribute	Area 1		Area 2	
1990 Pop. 65+ Yr. by HH Type:	4296	%	4444	%
Living Alone	1350	31.4	1353	30.4
In Families	2535	59.0	2723	61.3
In Non-Families	48	1.1	48	1.1
In Group Quarters	363	8.4	320	7.2
1990 Marital status:				
For Population 15+ Years:	37618	%	39699	%
Never Married	16883	44.9	17328	43.6
Now Married (Exc. Separated)	15985	42.5	17437	43.9
Divorced or Separated	3050	8.1	3235	8.1
Widowed	1700	4.5	1699	4.3
For Females 15+ Years:	18545	%	19555	%
Never Married	7169	38.7	7381	37.7
Now Married (Exc. Separated)	7834	42.2	8546	43.7
Divorced or Separated	2021	10.9	2112	10.8
Widowed	1521	8.2	1516	7.8
1990 Educational Attainment for Population 25+ Years:	23340	%	25135	%
Less than 9th Grade	561	2.4	641	2.6
9th to 12th Grade, No Diploma	1291	5.5	1439	5.7
High School Graduate	3243	13.9	3508	14.0
Some College, No Degree	5297	22.7	5749	22.9
Associate Degree	1508	6.5	1578	6.3
Bachelor's Degree	5973	25.6	6383	25.4
Graduate or Prof. Degree	5467	23.4	5837	23.2
1990 Pop. Age 16+, In Labor Frc:	21641	%	23122	%
Civilian Employed Males	10690	49.4	11485	49.7
Civilian Employed Females	9616	44.4	10235	44.3
Persons in Armed Forces	140	0.6	148	0.6
Persons Unemployed	1195	5.5	1254	5.4
1990 Occupat.-Employed pop. 16+:	20306	%	21715	%
Managerial/Prof. Spec	7620	37.5	8172	37.6
Exec/Admin/Managerial	2520	12.4	2766	12.7
Professional Specialty	5100	25.1	5406	24.9
Tech./Sales/Admn. Support	6678	32.9	7082	32.6
Technician and Related	1538	7.6	1602	7.4
Sales	2051	10.1	2230	10.3
Administrative Support	3089	15.2	3250	15.0
Service Occupation	2854	14.1	3015	13.9
Private Household	107	0.5	104	0.5
Protective Service	215	1.1	224	1.0
Other Service	2532	12.5	2687	12.4
Farming/Forestry/Fishing	541	2.7	659	3.0
Precision/Craft/Repair	1005	4.9	1104	5.1
Operator/Fabricators/Laborer	1608	7.9	1683	7.8
Machine Op/Assem./Inspect	727	3.6	741	3.4
Trans. & Material Moving	363	1.8	386	1.8
Handlers/Helpers/Laborers	518	2.6	556	2.6

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237
Area 1 = CORVALLIS, OR
Area 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Attribute	Area 1		Area 2	
1990 Industry-Employed Pop. 16+:	20306	%	21718	%
Agriculture/Forestry/Fisheries	696	3.4	843	3.9
Mining	5	0.0	8	0.0
Construction	511	2.5	599	2.8
Manufacturing-Nondurable Goods	601	3.0	604	2.8
Manufacturing-Durable Goods	1990	9.8	2230	10.3
Transportation	299	1.5	340	1.6
Communications and Public Util	194	1.0	216	1.0
Wholesales Trade	323	1.6	364	1.7
Retail Trade	3807	18.7	4040	18.6
Finance/Insurance/Real Estate.	819	4.0	873	4.0
Business and Repair Services	668	3.3	713	3.3
Personal Services	588	2.9	588	2.7
Entertainment/Recreation Serv.	270	1.3	276	1.3
Professional and Related Serv.	8818	43.4	9241	42.5
Public Administration	717	3.5	783	3.6
1990 Pop. by Travel Time to Work:	19914	%	21276	%
Travel in Under 10 Minutes	7310	36.7	7507	35.3
Travel in 10 to 14 Minutes	5727	28.8	6039	28.4
Travel in 15 to 19 Minutes	3027	15.2	3485	16.4
Travel in 20 to 29 Minutes	1976	9.9	2177	10.2
Travel in 30 to 44 Minutes	911	4.6	1012	4.8
Travel in 45 to 59 Minutes	458	2.3	515	2.4
Travel in 60 to 89 Minutes	315	1.6	340	1.6
Travel in 90 Minutes and Over.	190	1.0	201	0.9
1990 Pop. by Transport. to Work:	19914	%	21281	%
Travel by Driving Alone	12608	63.3	13680	64.3
Travel by Carpool	1835	9.2	2014	9.5
Travel by Public transport	310	1.6	310	1.5
Travel by Walking Only	2527	12.7	2533	11.9
Travel by Other Means	1896	9.5	1945	9.1
Working at Home	738	3.7	799	3.8
1990 Housing Units:	17307	%	18309	%
Owner-Occupied Housing Units	7237	41.8	8103	44.3
Renter-Occupied Housing Units.	9506	54.9	9618	52.5
Vacant Housing Units	564	3.3	588	3.2
1990 Specified Owner-Occ. Housing Units by Value:	6189	%	6743	%
Under $ 20,000	14	0.2	20	0.3
$20,000 to $39,999	233	3.8	243	3.6
$40,000 to $49,999	687	11.1	684	10.1
$50,000 to $74,999	2573	41.6	2637	39.1
$75,000 to $99,999	1496	24.2	1651	24.5
$100,000 to $149,999	961	15.5	1165	17.3
$150,000 to $199,999	180	2.9	246	3.6
$200,000 to $299,999	41	0.7	86	1.3
$300,000 to $499,999	2	0.0	8	0.1
$500,000 and Over	2	0.0	3	0.0
Median Housing Value	71010		72999	

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237
Area 1 = CORVALLIS, OR
Area 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Attribute	Area 1		Area 2	
1990 Specified Renter-Occupied Units by Gross Rent:	9474	%	9547	%
With Cash Rent	9293	98.1	9357	98.0
Less than $100	84	0.9	87	0.9
$100 to $149	186	2.0	179	1.9
$150 to $199	394	4.2	410	4.3
$200 to $249	549	5.8	568	5.9
$250 to $299	839	8.9	852	8.9
$300 to $399	3167	33.4	3140	32.9
$400 to $499	2132	22.5	2157	22.6
$500 to $599	914	9.6	957	10.0
$600 to $749	670	7.1	662	6.9
$750 to $999	292	3.1	289	3.0
$1,000 or More	66	0.7	56	0.6
No Cash Rent	181	1.9	190	2.0
1990 Households by Vehicles:	16743	%	17719	%
0 Vehicles	1555	9.3	1562	8.8
1 Vehicle Available	6635	39.6	6758	38.1
2 Vehicles Available	6543	39.1	7048	39.8
3 Vehicles Available	1585	9.5	1834	10.4
4 Vehicles Available	318	1.9	386	2.2
5+ Vehicles Available	107	0.6	131	0.7
1990 Housing Units by Number of Units in Structure:	17307	%	18308	%
Single Detached Unit	8244	47.6	9103	49.7
Single Attached Unit	988	5.7	1013	5.5
Structures with 2 Units	981	5.7	978	5.3
Structures w/ 3-4 Units	1131	6.5	1079	5.9
Structures w/ 5-9 Units	1557	9.0	1530	8.4
Structures w/ 10-19 Units	1677	9.7	1667	9.1
Structures w/ 20-49 Units	1277	7.4	1276	7.0
Structures w/ 50+ Units	559	3.2	534	2.9
Mobile Homes/Trailers or Other	893	5.2	1127	6.2
1990 Housing Units by Year Built:	17307	%	18308	%
Built 1989 to March 1990	178	1.0	193	1.1
Built 1985 to 1988	459	2.7	527	2.9
Built 1980 to 1984	1556	9.0	1667	9.1
Built 1970 to 1979	5315	30.7	5697	31.1
Built 1960 to 1969	3550	20.5	3718	20.3
Built 1950 to 1959	2624	15.2	2722	14.9
Built 1940 to 1949	1569	9.1	1664	9.1
Built 1939 or Earlier	2056	11.9	2120	11.6
1990 HUs by Year Moved In:	16743	%	17719	%
Moved in 1989 to March 1990	6640	39.7	6745	38.1
Moved in 1985 to 1988	4809	28.7	5073	28.6
Moved in 1980 to 1984	1683	10.1	1944	11.0
Moved in 1970 to 1979	2060	12.3	2260	12.8
Moved in 1969 or Earlier	1551	9.3	1697	9.6

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237
Area 1 = CORVALLIS, OR
Area 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Attribute	Area 1		Area 2	
1997 Expenditures by Selected Product Categories (in thousands of dollars):	($000s)	U.S. Index	($000s)	U.S. Index
Food at Home	$61279	85	$66352	86
Food Away From Home	$39097	83	$42611	85
Alcoholic Beverages at Home	$3913	88	$4207	89
Alcoholic Beverages Away From Home	$2839	93	$3037	94
Personal Care Products	$5741	84	$6230	86
Personal Care Services	$4025	74	$4394	76
Nonprescription Drugs	$2324	88	$2515	89
Women's Apparel	$11864	81	$13031	83
Men's Apparel	$7218	86	$7917	89
Girls' Apparel	$1287	81	$1415	84
Boys' Apparel	$1652	81	$1810	84
Infants' Apparel	$1454	91	$1557	92
Footwear (Excl. Infants)	$5665	88	$6155	90
Housekeeping Supplies	$7246	80	$7924	83
Lawn/Garden Supplies (Incl. Plants)	$1163	78	$1286	81
Domestic Services	$6369	69	$7107	73
Household Textiles	$2167	81	$2390	84
Furniture	$8158	85	$8891	87
Floor Coverings	$1794	69	$2049	74
Major Appliances	$3478	89	$3792	92
Small Appliances & Houseware	$2004	82	$2200	85
TV, Radio & Sound Equipment	$11723	90	$12720	92
Other Entertainment Equip./Services	$11823	83	$13163	87
Transportation	$113161	88	$124431	91

1997 Expenditures by Selected Store Type (in thousands of dollars):	($000s)	U.S. Index	($000s)	U.S. Index
Building Materials & Supply Stores	$6352	86	$7018	89
Hardware Stores	$924	88	$1017	92
Retail Nursery/Lawn/Garden Supply	$1277	86	$1409	89
Auto Supply Stores	$6333	89	$6946	92
Gasoline/Service Stations	$31225	96	$34059	98
Grocery Stores	$67079	87	$72664	88
Drug and Proprietary Stores	$12262	93	$13324	95
Eating Places	$38924	84	$42413	86
Drinking Places	$1961	88	$2121	90
Department Stores (Excl. Leased)	$28595	85	$31352	88
Apparel Stores	$11621	83	$12742	86
Shoe Stores	$3388	88	$3684	90
Furniture	$7342	85	$8017	87
Home Furnishing Stores	$3499	76	$3915	80
Household Appliance Stores	$1825	87	$1998	89
Radio/TV/Computer/Music Stores	$6675	89	$7296	92

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237

1997 Male and Female Population Comparison

Area 1 = CORVALLIS, OR

Males		Age		Females
178		85+	f	541
622	mm	75-84	fff	974
878	mmm	65-74	ffff	1292
1208	mmmm	55-64	ffff	1355
2475	mmmmmmmm	45-54	ffffffff	2491
1676	mmmmm	40-44	fffff	1672
1834	mmmmmm	35-39	ffffff	1887
2067	mmmmmmm	30-34	ffffff	1777
2078	mmmmmmm	25-29	ffffff	1772
4376	mmmmmmmmmmmmmmmm	20-24	ffffffffff	3360
2546	mmmmmmmm	15-19	ffffffff	2350
1260	mmmm	10-14	ffff	1171
1328	mmmm	5-9	ffff	1230
1345	mmmm	<5	ffff	1300

Area 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Males		Age		Females
171		85+	f	527
659	mm	75-84	fff	989
993	mmm	65-74	ffff	1405
1390	mmmm	55-64	fffff	1542
2765	mmmmmmmmm	45-54	fffffffff	2788
1830	mmmmmm	40-44	ffffff	1841
1976	mmmmmm	35-39	ffffff	2027
2129	mmmmmmm	30-34	ffffff	1850
2151	mmmmmmm	25-29	ffffff	1864
4435	mmmmmmmmmmmmmmmm	20-24	ffffffffff	3422
2687	mmmmmmmmm	15-19	ffffffff	2474
1419	mmmm	10-14	ffff	1314
1440	mmmm	5-9	ffff	1320
1454	mmmm	<5	ffff	1400

==========

1997 estimates and 2002 projections produced by Claritas Inc.

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237

1997 Total Population Comparison (%)

ea 1 = CORVALLIS, OR
ea 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Area 1		Age		Area 2
1.5	1	85+	2	1.4
3.4	111	75-84	22	3.3
4.6	1111	65-74	2222	4.8
5.4	1111	55-64	22222	5.8
10.6	111111111	45-54	2222222222	11.0
7.1	111111	40-44	222222	7.3
7.9	1111111	35-39	2222222	8.0
8.2	1111111	30-34	2222222	7.9
8.2	1111111	25-29	2222222	8.0
16.4	111111111111111	20-24	22222222222222	15.6
10.4	111111111	15-19	222222222	10.3
5.2	1111	10-14	2222	5.4
5.4	1111	5-9	22222	5.5
5.6	11111	<5	22222	5.7

Claritas Inc. 28-APR-98
Sales (888)231-4237 Support (800)780-4237

1997 Households by Household Income (%):
(income ranges in thousands of dollars)

Area 1 = CORVALLIS, OR
Area 2 = CUSTOM AREA - URBAN GROWTH BOUNDARY

Area 1		HH inc		Area 2
1.8	1	$150+	2	2.0
6.0	11111	$100-$150	22222	6.7
7.6	111111	$ 75-$100	2222222	8.0
16.3	11111111111111	$ 50-$ 75	22222222222222	16.6
14.9	1111111111111	$ 35-$ 50	222222222222	14.6
5.9	11111	$ 30-$ 35	22222	5.9
6.5	11111	$ 25-$ 30	22222	6.2
7.2	111111	$ 20-$ 25	222222	7.0
17.2	111111111111111	$ 10-$ 20	22222222222222	16.8
16.8	11111111111111	<$10	22222222222222	16.2

Appendix E Land Supply Summary Tables

Appendix E presents summary tables for land supply data. They provide more detail than the tables presented in Chapter 4. For this summary, each parcel within the UGB was classified into one of the following categories:

- Developed: parcels that have improvements on them and have no vacant areas large enough to develop
- Vacant: parcels greater than 0.075 acre (3,250 sq. ft) with improvement values less than $5,000 and no physical constraints
- Vacant constrained: same as vacant, but with portions that fall within significant wetlands, riparian areas, or above 560' in elevation
- Partially vacant: parcels with some development, but vacant portions large enough to develop
- Partially vacant constrained: same as partially vacant, but with constraints
- Undevelopable vacant: vacant parcels smaller than 0.075 acre (3,250 sq. ft)
- Undevelopable constrained: vacant constrained or partially vacant constrained parcels with unconstrained remainders smaller than 0.075 acre (3,250 sq. ft).

The tables generally summarize land in the following groups:

- All land: includes developed, partially developed, and vacant parcels
- Land unavailable for development: includes developed parcels and lands used for parks, open space, and other public uses that are considered unavailable for development
- Land available for development: includes fully vacant parcels and partially vacant parcels
- Land potentially redevelopable: includes the vacant or developed portion of parcels in commercial, industrial, and multi-family residential uses, sorted by ratios of improvement value to land value.

The tables that follow are the same as those in the May draft of this report. None of the numbers changed as a result of subsequent review.

List of Summary Tables

itle

Table E-1. Land by Land Use Category (entire UGB)

All land inside the Corvallis UGB

Land Use	Number of Parcels	Acres				
		Total	Unavailable for Dev.	Gross Available for Dev.	Con-strained	Net Available for Dev.
Comm/Office	814	516.4	326.2	190.2		190.2
Comm/Office Total	814	516.4	326.2	190.2		190.2
Industrial	59	438.7	347.2	91.5		91.5
Industrial Total	59	438.7	347.2	91.5		91.5
Government/Institutional	409	4,232.3	4,232.3			
Recreation	5	188.4	188.4			
Religious/Charitable Services	123	200.6	200.6			
Utilities	18	18.8	18.8			
Pub/Inst Total	555	4,640.2	4,640.2			
Single Family Residential	11,414	6,371.9	2,511.7	3,860.2	580.0	3,280.2
Multi-Family	366	286.9	286.9			
Residential Total	11,780	6,658.8	2,798.7	3,860.2	580.0	3,280.2
Agriculture	126	2,068.7		2,068.7	347.2	1,721.6
Vacant	1,031	1,916.3	5.9	1,910.4	252.0	1,658.4
Vacant Total	1,157	3,985.1	5.9	3,979.2	599.2	3,379.9
Roads, other non-taxlotted areas	1	0.3	0.3			
No Data	5	14.3	0.0	14.3	3.3	11.0
Other Total	6	14.6	0.4	14.3	3.3	11.0
Grand Total	14,371	16,253.9	8,118.5	8,135.3	1,182.5	6,952.9

Notes:
1/ Land use categories generated from assessor's property classifications and revised by City staff & LCOG
2/ Unavailable for development includes land which is developed and undeveloped land unavailable for development (i.e., parks, conservation areas, etc.)

Table E-2. Land by Land Use Category and Area (city limit & urban fringe)

All land inside the Corvallis UGB

Land Use	Number of Parcels	Acres				
		Total	Unavailable for Dev.	Gross Available for Dev.	Con-strained	Net Available for Dev.
Inside city limit						
Comm/Office	799	489.0	314.6	174.4		174.4
Comm/Office Total	799	489.0	314.6	174.4		174.4
Industrial	34	263.5	217.9	45.6		45.6
Industrial Total	34	263.5	217.9	45.6		45.6
Government/Institutional	381	1,358.9	1,358.9			
Recreation	3	8.3	8.3			
Religious/Charitable Services	113	155.6	155.6			
Utilities	14	14.6	14.6			
Pub/Inst Total	511	1,537.4	1,537.4			
Single Family Residential	10,706	3,141.0	2,121.5	1,019.5	153.7	865.8
Multi-Family	366	286.9	286.9			
Residential Total	11,072	3,428.0	2,408.5	1,019.5	153.7	865.8
Agriculture	21	436.8		436.8	41.8	395.0
Vacant	885	988.7	5.8	982.9	141.8	841.1
Vacant Total	906	1,425.5	5.8	1,419.7	183.6	1,236.1
No Data	1	1.6		1.6	0.4	1.2
Roads, other non-taxlotted areas	1	0.3	0.3			
Other Total	2	1.9	0.3	1.6	0.4	1.2
Subtotal	13,324	7,145.3	4,484.5	2,660.9	337.7	2,323.1
rban Fringe						
Comm/Office	15	27.4	11.6	15.8		15.8
Comm/Office Total	15	27.4	11.6	15.8		15.8
Industrial	25	175.2	129.3	45.9		45.9
Industrial Total	25	175.2	129.3	45.9		45.9
Government/Institutional	28	2,873.4	2,873.4			
Recreation	2	180.1	180.1			
Religious/Charitable Services	10	45.0	45.0			
Utilities	4	4.2	4.2			
Pub/Inst Total	44	3,102.8	3,102.8			
Single Family Residential	708	3,230.9	390.2	2,840.7	426.2	2,414.4
Residential Total	708	3,230.9	390.2	2,840.7	426.2	2,414.4
Agriculture	105	1,631.9		1,631.9	305.4	1,326.5
Vacant	146	927.7	0.2	927.5	110.2	817.3
Vacant Total	251	2,559.6	0.2	2,559.5	415.6	2,143.8
No Data	4	12.7	0.0	12.7	2.9	9.8
Other Total	4	12.7	0.0	12.7	2.9	9.8
Subtotal	1,047	9,108.5	3,634.0	5,474.5	844.7	4,629.7
Grand Total	**14,371**	**16,253.9**	**8,118.5**	**8,135.3**	**1,182.5**	**6,952.9**

Notes:
1/ Land use categories generated from assessor's property classifications and revised by City staff & LCOG
2/ Unavailable for development includes land which is developed and undeveloped land unavailable for development (i.e., parks, conservation areas, etc.)

Table E-3. Land by Plan Designation (entire UGB)

All land inside the Corvallis UGB

Plan Designation	Number of Parcels	Acres				
		Total	Unavailable for Dev.	Gross Available for Dev.	Con-strained	Net Available for Dev.
Agriculture	7	1,133.1	957.4	175.7	2.0	173.7
Conservation	140	1,103.6	795.5	308.2	66.0	242.1
Ag/OS Total	147	2,236.7	1,752.9	483.8	68.0	415.8
Central Business District	475	102.1	97.9	4.2	0.9	3.2
Linear Commercial	255	193.4	143.9	49.6	8.3	41.3
Professional Office	127	56.5	17.7	38.8	6.6	32.2
Shopping Area	122	118.1	52.5	65.6	1.5	64.0
Comm/Office Total	979	470.1	312.0	158.1	17.4	140.8
General Industrial	176	1,477.5	365.5	1,112.0	142.8	969.2
Intensive Industrial	37	256.9	76.0	181.0	49.5	131.4
Limited Industrial	46	56.2	13.0	43.2	7.0	36.3
Research-Technology Center	36	89.4	36.7	52.7	7.3	45.4
Industrial Total	295	1,880.0	491.2	1,388.8	206.6	1,182.3
Intensive Development Sector	59	629.9	34.9	595.1	130.5	464.5
Mixed Use Total	59	629.9	34.9	595.1	130.5	464.5
Public-Institutional	135	2,278.8	2,183.2	95.6	1.3	94.3
Pub/Inst Total	135	2,278.8	2,183.2	95.6	1.3	94.3
Low Density Residential	9,109	6,933.3	2,445.0	4,488.3	612.4	3,876.0
Medium Density Residential	2,272	1,173.8	376.8	797.0	124.5	672.5
Medium-High Density Residential	796	365.9	247.0	118.9	19.4	99.5
High Density Residential	579	219.3	209.6	9.7	2.4	7.3
Residential Total	12,756	8,692.3	3,278.4	5,413.9	758.6	4,655.2
No Data		66.0	66.0			
No Data Total		66.0	66.0			
Grand Total	**14,371**	**16,253.9**	**8,118.5**	**8,135.3**	**1,182.5**	**6,952.9**

Notes:
1/ Unavailable for development includes land which is developed and undeveloped land unavailable for development (i.e., parks, conservation areas, etc.)

Table E-4. Land Use by Plan Designation by Area (city limit & urban fringe)

All land inside the Corvallis UGB

Plan Designation	Number of Parcels	Acres Total	Unavailable for Dev.	Gross Available for Dev.	Con-strained	Net Available for Dev.
Inside City Limit						
Conservation	72	491.1	473.9	17.2	5.4	11.8
Ag/OS Total	72	491.1	473.9	17.2	5.4	11.8
Central Business District	475	102.1	97.9	4.2	0.9	3.2
Linear Commercial	255	193.4	143.9	49.6	8.3	41.3
Professional Office	127	56.5	17.7	38.8	6.6	32.2
Shopping Area	122	118.1	52.5	65.6	1.5	64.0
Comm/Office Total	979	470.1	312.0	158.1	17.4	140.8
General Industrial	108	859.7	312.4	547.3	67.1	480.2
Intensive Industrial	6	21.1	14.5	6.6		6.6
Limited Industrial	46	56.2	13.0	43.2	7.0	36.3
Research-Technology Center	36	89.4	36.7	52.7	7.3	45.4
Industrial Total	196	1,026.4	376.6	649.8	81.4	568.4
Public-Institutional	127	769.7	696.4	73.3	1.3	72.0
Pub/Inst Total	127	769.7	696.4	73.3	1.3	72.0
Low Density Residential	8,327	2,823.5	1,801.2	1,022.3	121.4	900.9
Medium Density Residential	2,254	1,045.4	369.2	676.2	97.5	578.7
Medium-High Density Residential	790	299.7	245.5	54.2	10.9	43.3
High Density Residential	579	219.3	209.6	9.7	2.4	7.3
Residential Total	11,950	4,388.0	2,625.5	1,762.5	232.3	1,530.2
Subtotal	13,324	7,145.3	4,484.5	2,660.9	337.7	2,323.1
Urban Fringe						
Agriculture	7	1,133.1	957.4	175.7	2.0	173.7
Conservation	68	612.5	321.5	291.0	60.6	230.4
Ag/OS Total	75	1,745.6	1,279.0	466.7	62.6	404.0
General Industrial	69	617.8	53.1	564.7	75.7	489.0
Intensive Industrial	30	235.8	61.5	174.4	49.5	124.8
Industrial Total	99	853.6	114.6	739.0	125.2	613.9
Intensive Development Sector	59	629.9	34.9	595.1	130.5	464.5
Mixed Use Total	59	629.9	34.9	595.1	130.5	464.5
Public-Institutional	8	1,509.1	1,486.8	22.3	0.0	22.3
Pub/Inst Total	8	1,509.1	1,486.8	22.3	0.0	22.3
Low Density Residential	782	4,109.8	643.8	3,466.0	491.0	2,975.0
Medium Density Residential	18	128.4	7.6	120.8	26.9	93.9
Medium-High Density Residential	6	66.1	1.5	64.6	8.5	56.2
Residential Total	806	4,304.3	652.9	3,651.4	526.4	3,125.0
No Data		66.0	66.0			
No Data Total		66.0	66.0			
Subtotal	1,047	9,108.5	3,634.0	5,474.5	844.7	4,629.7
Grand Total	**14,371**	**16,253.9**	**8,118.5**	**8,135.3**	**1,182.5**	**6,952.9**

Notes:
1/ Unavailable for development includes land which is developed and undeveloped land unavailable for development (i.e., parks, conservation areas, etc.)

Table E-5. Land by Zoning District (inside the city limit)

Land inside the Corvallis City Limit

Zoning District	Zoning	Number of Parcels	Acres				
			Total	Unavail. for Dev.	Gross Available for Dev.	Con-strained	Net Available for Dev.
Agriculture-Open Space	AGOS	6	200.7	199.2	1.5	0.0	1.5
Ag/OS Total		6	200.7	199.2	1.5	0.0	1.5
Central Business	CB	405	86.3	84.3	2.1		2.1
Central Business Fringe	CBF	96	21.3	18.3	3.0	1.8	1.2
Community Shopping	CS	22	63.7	16.3	47.4		47.4
Linear Commercial	LC	253	194.9	142.6	52.2	8.3	43.9
Professional and Administrative Office	PAO	127	51.3	23.2	28.1	4.6	23.5
Shopping Area	SA	91	49.0	31.8	17.2	1.1	16.1
Shopping Area University	SAU	1	0.2	0.2			
Special Shopping	SSD	8	7.5	4.0	3.4	0.5	2.9
Comm/Office Total		1,003	474.1	320.7	153.4	16.3	137.1
General Industrial	GI	108	747.7	174.5	573.2	70.8	502.4
Intensive Industrial	II	8	24.0	15.0	9.0	0.6	8.4
Limited Industrial	LI	42	26.6	11.1	15.5	2.7	12.8
Research Technology Center	RTC	27	100.2	48.6	51.6	7.2	44.4
Industrial Total		185	898.6	249.3	649.2	81.3	567.9
General Industrial	GI	1	136.2	136.2			
Oregon State University District	OSU	62	426.0	420.1	5.9		5.9
Pub/Inst Total		63	562.3	556.3	5.9		5.9
Low Density Residential-3.5	RS3.5	6,387	2,879.6	1,868.3	1,011.3	104.7	906.6
Low Density Residential-5	RS5	1,823	449.3	339.0	110.3	20.3	90.1
Low Density Residential-6	RS6	248	293.5	36.1	257.4	22.9	234.5
Medium Density Residential-9	RS9	1,701	716.9	347.4	369.5	76.0	293.5
Medium-High Density Residential	RS12	1,150	364.7	291.3	73.4	13.4	60.0
High Density Residential	RS20	758	305.7	276.8	28.9	2.9	26.0
Residential Total		12,067	5,009.7	3,158.9	1,850.8	240.1	1,610.7
Grand Total		**13,324**	**7,145.3**	**4,484.5**	**2,660.9**	**337.7**	**2,323.1**

Notes:
1/ Unavailable for development includes land which is developed and undeveloped land unavailable for development (i.e., parks, conservation areas, etc.)

Table E-6. Land Use by Development Status (entire UGB)

All land inside the Corvallis UGB

Classification	Number of Parcels	Acres				
		Total	Unavail. for Dev.	Gross Available for Dev.	Con-strained	Net Available for Dev.
Developed	11,876	7,344.6	7,344.6			
Vacant	625	1,103.5		1,103.5		1,103.5
Vacant Constrained	364	2,880.8		2,880.8	593.8	2,287.0
Partially Vacant	873	1,673.9	293.7	1,380.2		1,380.2
Partially Vacant Constrained	439	3,225.5	469.8	2,755.6	573.9	2,181.8
Undevelopable Constrained	53	19.6	4.4	15.2	14.8	0.4
Undevelopable Vacant	141	5.9	5.9			
Total	**14,371**	**16,253.9**	**8,118.5**	**8,135.3**	**1,182.5**	**6,952.9**

Notes:
1/ Development status refers to the land classification system used to evaluate land supply. All parcels were classified into mutually exclusive categories depending on whether improvements exist, the lot coverage of those improvements, and the parcel size.

Table E-7. Land Use by Development Status by Area (city limit & urban fringe)

All land inside the Corvallis UGB

Classification	Number of Parcels	Acres				
		Total	Unavail. for Dev.	Gross Available for Dev.	Con-strained	Net Available for Dev.
Inside the city limit						
Developed	11,513	4,046.2	4,046.2			
Vacant	481	310.7		310.7		310.7
Vacant Constrained	267	1,104.0		1,104.0	177.7	926.3
Partially Vacant	596	721.0	155.2	565.8		565.8
Partially Vacant Constrained	286	940.6	272.9	667.6	147.6	520.0
Undevelopable Constrained	44	17.0	4.4	12.6	12.4	0.3
Undevelopable Vacant	137	5.8	5.8			
Subtotal	13,324	7,145.3	4,484.5	2,660.9	337.7	2,323.1
Urban Fringe						
Developed	363	3,298.4	3,298.4			
Vacant	144	792.8		792.8		792.8
Vacant Constrained	97	1,776.7		1,776.7	416.0	1,360.7
Partially Vacant	277	952.9	138.5	814.3		814.3
Partially Vacant Constrained	153	2,284.9	196.9	2,088.0	426.2	1,661.8
Undevelopable Constrained	9	2.6		2.6	2.5	0.1
Undevelopable Vacant	4	0.2	0.2			
Subtotal	1,047	9,108.5	3,634.0	5,474.5	844.7	4,629.7
Total	**14,371**	**16,253.9**	**8,118.5**	**8,135.3**	**1,182.5**	**6,952.9**

Notes:
1/ Development status refers to the land classification system used to evaluate land supply. All parcels were classified into mutually exclusive categories depending on whether improvements exist, the lot coverage of those improvements, and the parcel size.

Table E-8. Developed Land by Plan Designation (city limit & urban fringe)

All land inside the Corvallis UGB

Plan Designation	Number of Parcels	Acres				Percent of Acres by Area	Percent of Total Acres
		Total	Avg Parcel Size	Max Parcel Size	Min Parcel Size		
Inside the city limit							
Conservation	58	473.3	8.2	135.4	0.1	11.7%	6.4%
Ag/OS Total	58	473.3	8.2			11.7%	6.4%
Central Business District	459	95.9	0.2	4.7	0.0	2.4%	1.3%
Linear Commercial	169	96.0	0.6	5.3	0.0	2.4%	1.3%
Professional Office	91	11.9	0.1	1.1	0.0	0.3%	0.2%
Shopping Area	92	42.1	0.5	5.1	0.0	1.0%	0.6%
Comm/Office Total	811	245.9	0.3			6.1%	3.3%
General Industrial	46	140.9	3.1	29.0	0.1	3.5%	1.9%
Intensive Industrial	3	5.8	1.9	3.1	0.3	0.1%	0.1%
Limited Industrial	24	10.9	0.5	3.2	0.1	0.3%	0.1%
Research-Technology Center	11	12.9	1.2	6.6	0.2	0.3%	0.2%
Industrial Total	84	170.5	2.0			4.2%	2.3%
Public-Institutional	112	692.9	6.2	199.1	0.1	17.1%	9.4%
Pub/Inst Total	112	692.9	6.2			17.1%	9.4%
Low Density Residential	7,188	1,672.4	0.2	18.9	0.0	41.3%	22.8%
Medium Density Residential	1,998	346.2	0.2	5.8	0.0	8.6%	4.7%
Medium-High Density Residential	702	238.1	0.3	17.2	0.0	5.9%	3.2%
High Density Residential	560	207.0	0.4	10.0	0.0	5.1%	2.8%
Residential Total	10,448	2,463.6	0.2			60.9%	33.5%
Subtotal	11,513	4,046.2	0.4			100.0%	55.1%
Urban Fringe							
Agriculture	6	957.4	159.6	476.2	3.2	29.0%	13.0%
Conservation	20	306.0	15.3	108.7	0.1	9.3%	4.2%
Ag/OS Total	26	1,263.4	48.6			38.3%	17.2%
General Industrial	39	43.1	1.1	11.3	0.0	1.3%	0.6%
Intensive Industrial	11	7.7	0.7	3.0	0.1	0.2%	0.1%
Industrial Total	50	50.8	1.0			1.5%	0.7%
Intensive Development Sector	14	16.9	1.2	9.5	0.3	0.5%	0.2%
Mixed Use Total	14	16.9	1.2			0.5%	0.2%
Public-Institutional	6	1,486.8	247.8	580.9	29.7	45.1%	20.2%
Pub/Inst Total	6	1,486.8	247.8			45.1%	20.2%
Low Density Residential	262	477.0	1.8	168.1	0.0	14.5%	6.5%
Medium Density Residential	5	3.5	0.7	0.9	0.4	0.1%	0.0%
Residential Total	267	480.5	1.8			14.6%	6.5%
Subtotal	363	3,298.4	9.1			100.0%	44.9%
Grand Total	**11,876**	**7,344.6**	**0.6**				**100.0%**

Notes:
1/ Developed category includes lands unavailable for development (i.e., parks, conservation areas, etc.)

Table E-9. Developed Land by Zoning (inside city limit)

All land inside the Corvallis City Limit

Zoning District	Number of Parcels	Acres				
		Total	Avg Parcel Size	Max Parcel Size	Min Parcel Size	Percent of Total Acres
Agriculture-Open Space	4	199.2	49.8	135.4	4.1	4.9%
Ag/OS Total	4	199.2				4.9%
Central Business	396	82.3	0.2	4.7	0.0	2.0%
Central Business Fringe	86	17.8	0.2	1.5	0.0	0.4%
Community Shopping	8	10.1	1.3	5.1	0.2	0.3%
Linear Commercial	165	93.8	0.6	5.3	0.0	2.3%
Professional and Administrative Office	95	17.4	0.2	4.1	0.0	0.4%
Shopping Area	77	28.4	0.4	4.4	0.0	0.7%
Shopping Area University	1	0.2	0.2	0.2	0.2	0.0%
Special Shopping	4	3.0	0.8	1.3	0.4	0.1%
Comm/Office Total	832	253.1				6.3%
General Industrial	45	139.8	3.1	29.0	0.1	3.5%
Intensive Industrial	3	5.8	1.9	3.1	0.3	0.1%
Limited Industrial	23	9.0	0.4	3.2	0.1	0.2%
Research Technology Center	5	25.0	5.0	13.8	0.3	0.6%
Industrial Total	76	179.6				4.4%
Oregon State University District	61	419.6	6.9	199.1	0.1	10.4%
Pub/Inst Total	61	419.6				10.4%
Low Density Residential-3.5	5,428	1,755.4	0.3	65.6	0.0	43.4%
Low Density Residential-5	1,645	320.2	0.2	6.5	0.0	7.9%
Low Density Residential-6	202	34.1	0.2	1.2	0.1	0.8%
Medium Density Residential-9	1,510	327.0	0.2	21.2	0.0	8.1%
Medium-High Density Residential	1,018	282.9	0.3	12.6	0.0	7.0%
High Density Residential	737	275.1	0.4	17.2	0.0	6.8%
Residential Total	10,540	2,994.7				74.0%
Grand Total	**11,513**	**4,046.2**				100.0%

Notes:
1/ Developed category includes lands unavailable for development (i.e., parks, conservation areas, etc.)

Table E-10. Vacant and Partially Vacant Land by Plan Designation (city limit & urban fringe)
All land inside the Corvallis UGB

Plan Designation	Number of Parcels	Acres Total	Unavail. for Dev.	Gross Available for Dev.	Con-strained	Net Available for Dev.
Inside the city limit						
Conservation	12	17.5	0.6	16.9	5.2	11.7
Ag/OS Total	12	17.5	0.6	16.9	5.2	11.7
Central Business District	15	6.1	1.9	4.2	0.9	3.2
Linear Commercial	82	97.1	47.7	49.4	8.1	41.3
Professional Office	35	44.6	5.8	38.8	6.6	32.2
Shopping Area	29	76.0	10.4	65.6	1.5	64.0
Comm/Office Total	161	223.7	65.8	157.9	17.2	140.8
General Industrial	61	718.7	171.4	547.3	67.1	480.2
Intensive Industrial	3	15.3	8.7	6.6		6.6
Limited Industrial	22	45.3	2.1	43.2	7.0	36.3
Research-Technology Center	25	76.5	23.8	52.7	7.3	45.4
Industrial Total	111	855.9	206.1	649.8	81.4	568.4
Public-Institutional	15	76.8	3.5	73.3	1.3	72.0
Pub/Inst Total	15	76.8	3.5	73.3	1.3	72.0
Low Density Residential	1,027	1,132.2	121.6	1,010.6	109.9	900.8
Medium Density Residential	222	697.5	21.8	675.7	97.1	578.6
Medium-High Density Residential	66	60.4	6.2	54.2	10.9	43.3
High Density Residential	16	12.2	2.5	9.7	2.4	7.3
Residential Total	1,331	1,902.4	152.1	1,750.3	220.3	1,530.0
Subtotal	1,630	3,076.3	428.1	2,648.2	325.4	2,322.8
rban Fringe						
Agriculture	1	175.7		175.7	2.0	173.7
Conservation	48	306.5	15.6	291.0	60.6	230.4
Ag/OS Total	49	482.2	15.6	466.7	62.6	404.0
General Industrial	29	574.7	10.0	564.7	75.7	489.0
Intensive Industrial	19	228.1	53.8	174.4	49.5	124.8
Industrial Total	48	802.8	63.8	739.0	125.2	613.9
Intensive Development Sector	45	613.1	18.0	595.1	130.5	464.5
Mixed Use Total	45	613.1	18.0	595.1	130.5	464.5
Public-Institutional	2	22.3		22.3	0.0	22.3
Pub/Inst Total	2	22.3		22.3	0.0	22.3
Low Density Residential	508	3,630.0	166.7	3,463.4	488.5	2,974.9
Medium Density Residential	12	124.8	4.0	120.8	26.9	93.9
Medium-High Density Residential	6	66.1	1.5	64.6	8.5	56.2
Residential Total	526	3,821.0	172.2	3,648.8	523.9	3,124.9
No Data	1	66.0	66.0			
No Data Total	1	66.0	66.0			
Subtotal	671	5,807.3	335.5	5,471.9	842.3	4,629.6
Grand Total	**2,301**	**8,883.7**	**763.6**	**8,120.1**	**1,167.6**	**6,952.5**

Notes:
1/ Includes partially vacant parcels

Table E-11. Vacant and Partially Vacant Land by Zoning (inside city limit)

All land inside the Corvallis City Limit

			Acres				
Zoning	Code	Parcels	Total	Unavail. for Dev.	Gross Available for Dev.	Con-strained	Net Available for Dev.
Agriculture-Open Space	AGOS	2	1.5		1.5	0.0	1.5
Ag/OS Total		2	1.5		1.5	0.0	1.5
Central Business	CB	9	4.0	1.9	2.1		2.1
Central Business Fringe	CBF	9	3.4	0.4	3.0	1.8	1.2
Community Shopping	CS	14	53.6	6.2	47.4		47.4
Linear Commercial	LC	84	100.8	48.7	52.0	8.1	43.9
Professional and Administrative Office	PAO	31	33.8	5.8	28.1	4.6	23.5
Shopping Area	SA	14	20.6	3.4	17.2	1.1	16.1
Special Shopping	SSD	4	4.4	1.0	3.4	0.5	2.9
Comm/Office Total		165	220.6	67.4	153.2	16.1	137.1
General Industrial	GI	62	607.8	34.7	573.2	70.8	502.4
Intensive Industrial	II	5	18.3	9.3	9.0	0.6	8.4
Limited Industrial	LI	19	17.6	2.1	15.5	2.7	12.8
Research Technology Center	RTC	22	75.2	23.6	51.6	7.2	44.4
Industrial Total		108	718.9	69.6	649.2	81.3	567.9
General Industrial	GI	1	136.2	136.2			
Oregon State University District	OSU	1	6.4	0.5	5.9		5.9
Pub/Inst Total		2	142.7	136.7	5.9		5.9
Low Density Residential-3.5	RS3.5	869	1,107.2	106.5	1,000.7	94.2	906.5
Low Density Residential-5	RS5	154	126.8	17.8	109.0	19.0	90.0
Low Density Residential-6	RS6	45	259.4	2.0	257.4	22.9	234.5
Medium Density Residential-9	RS9	164	388.5	19.5	369.0	75.6	293.4
Medium-High Density Residential	RS12	105	80.4	7.0	73.4	13.4	60.0
High Density Residential	RS20	16	30.4	1.5	28.9	2.9	26.0
Residential Total		1,353	1,992.7	154.3	1,838.4	227.9	1,610.5
Grand Total		**1,630**	**3,076.3**	**428.1**	**2,648.2**	**325.4**	**2,322.8**

Notes:
1/ Includes partially vacant parcels

Table E-12. Fully Vacant Land by Plan Designation and Area (entire UGB)

All land inside the Corvallis UGB

Plan Designation	Number of Parcels	Acres: Gross Avail. for Dev.	Avg Parcel Size	Max Parcel Size	Min Parcel Size	Con-strained	Net Avail. for Dev.	Percent of Net Avail. for Dev.
Inside City Limit								
Conservation	9	15.0	1.7	3.6	0.2	4.3	10.7	0.3%
Ag/OS Total	9	15.0				4.3	10.7	0.3%
Central Business District	11	2.9	0.3	0.6	0.1	0.9	2.0	0.1%
Linear Commercial	22	22.1	1.0	6.4	0.1	7.8	14.2	0.4%
Professional Office	24	22.4	0.9	3.5	0.1	6.6	15.8	0.5%
Shopping Area	15	35.3	2.4	9.8	0.3	1.5	33.8	1.0%
Comm/Office Total	72	82.7				16.9	65.8	1.9%
General Industrial	23	345.6	15.0	110.5	0.1	48.3	297.3	8.8%
Limited Industrial	13	36.7	2.8	18.0	0.1	6.6	30.1	0.9%
Research-Technology Center	17	36.0	2.1	8.1	0.2	7.3	28.7	0.8%
Industrial Total	53	418.3				62.2	356.1	10.5%
Public-Institutional	8	34.0	4.2	12.0	0.4	1.3	32.7	1.0%
Pub/Inst Total	8	34.0				1.3	32.7	1.0%
Low Density Residential	431	590.5	1.4	100.7	0.1	59.4	531.0	15.7%
Medium Density Residential	128	228.2	1.8	105.4	0.1	27.9	200.4	5.9%
Medium-High Density Residential	38	42.6	1.1	18.8	0.1	5.2	37.5	1.1%
High Density Residential	9	3.5	0.4	1.6	0.1	0.6	2.9	0.1%
Residential Total	606	864.8				93.0	771.8	22.8%
Subtotal	748	1,414.8				177.7	1,237.0	36.5%
Urban Fringe								
griculture	1	175.7	175.7	175.7	175.7	2.0	173.7	5.1%
Conservation	25	147.4	5.9	40.9	0.1	33.6	113.8	3.4%
Ag/OS Total	26	323.1				35.6	287.5	8.5%
General Industrial	9	134.0	14.9	52.9	0.3	21.3	112.7	3.3%
Intensive Industrial	5	150.4	30.1	64.1	1.3	49.5	100.9	3.0%
Industrial Total	14	284.4				70.9	213.6	6.3%
Intensive Development Sector	9	182.6	20.3	119.9	0.3	40.0	142.6	4.2%
Mixed Use Total	9	182.6				40.0	142.6	4.2%
Public-Institutional	2	22.3	11.1	22.2	0.1	0.0	22.3	0.7%
Pub/Inst Total	2	22.3				0.0	22.3	0.7%
Low Density Residential	183	1,661.6	9.1	138.7	0.2	245.3	1,416.3	41.8%
Medium Density Residential	4	64.5	16.1	34.4	0.1	22.9	41.5	1.2%
Medium-High Density Residential	3	31.0	10.3	24.1	1.8	1.3	29.7	0.9%
Residential Total	190	1,757.1				269.6	1,487.6	43.9%
Subtotal	241	2,569.5				416.0	2,153.5	63.5%
Grand Total	**989**	**3,984.3**				**593.8**	**3,390.5**	**100.0%**

Notes:
1/ Gross acres available for development includes constrained acres
1/ Total acres includes constrained acres

Table E-13. Fully Vacant Land by Zoning (inside city limit)

All land inside the Corvallis City Limit

			Acres						
Zoning	District	Number of Parcels	Gross Avail. for Dev.	Avg Parcel Size	Max Parcel Size	Min Parcel Size	Con-strained	Net Avail. for Dev.	Percent of Net Avail. for Dev.
Agriculture-Open Space	AGOS	2	1.5	0.7	1.1	0.4	0.0	1.5	0.1%
Ag/OS Total		2	1.5				0.0	1.5	0.1%
Central Business	CB	5	0.8	0.2	0.2	0.1		0.8	0.1%
Central Business Fringe	CBF	7	2.2	0.3	0.6	0.1	1.0	1.2	0.1%
Community Shopping	CS	9	27.0	3.0	9.8	0.4		27.0	2.2%
Linear Commercial	LC	22	22.1	1.0	6.4	0.1	7.8	14.2	1.2%
Professional and Administrative Office	PAO	20	18.9	0.9	3.5	0.2	4.6	14.3	1.2%
Shopping Area	SA	6	9.6	1.6	4.7	0.2	1.1	8.5	0.7%
Special Shopping	SSD	2	1.0	0.5	0.5	0.5	0.5	0.5	0.0%
Comm/Office Total		71	81.5				15.0	66.5	5.4%
General Industrial	GI	26	371.5	14.3	110.5	0.1	52.0	319.5	25.8%
Intensive Industrial	II	1	2.4	2.4	2.4	2.4	0.6	1.8	0.1%
Limited Industrial	LI	10	8.9	0.9	4.6	0.1	2.3	6.6	0.5%
Research Technology Center	RTC	15	35.1	2.3	8.1	0.2	7.2	27.9	2.3%
Industrial Total		52	417.9				62.1	355.8	28.8%
Low Density Residential-3.5	RS3.5	359	391.9	1.1	44.5	0.1	35.4	356.5	28.8%
Low Density Residential-5	RS5	65	68.4	1.1	46.2	0.1	10.0	58.4	4.7%
Low Density Residential-6	RS6	35	231.5	6.6	100.7	0.1	21.5	210.0	17.0%
Medium Density Residential-9	RS9	80	175.5	2.2	105.4	0.1	25.3	150.2	12.1%
Medium-High Density Residential	RS12	73	21.1	0.3	2.5	0.1	7.3	13.8	1.1%
High Density Residential	RS20	11	25.5	2.3	18.8	0.1	1.0	24.4	2.0%
Residential Total		623	913.8				100.6	813.3	65.7%
Grand Total		**748**	**1,414.8**				**177.7**	**1,237.0**	**100.0%**

Notes:
1/ Gross acres available for development includes constrained acres

Table E-14. Acres in Fully Vacant Parcels by Plan Designation and Size Class

All land inside the Corvallis UGB

	Vacant, Unconstrained Acres						
Plan Designation	**Total**	**<1**	**1-4**	**5-9**	**10-19**	**20-49**	**50 or More**
Agriculture	173.7						173.7
Conservation	124.5	3.8	26.5	21.2	42.6	30.5	
Ag/OS Total	298.2	3.8	26.5	21.2	42.6	30.5	173.7
Central Business District	2.0	2.0					
Linear Commercial	14.2	3.9	7.3	3.0			
Professional Office	15.8	5.8	9.9				
Shopping Area	33.8	2.4	21.7	9.8			
Comm/Office Total	65.8	14.1	38.9	12.8			
General Industrial	410.0	4.4	22.3	8.2	31.3	67.1	276.7
Intensive Industrial	100.9		4.3			16.6	80.0
Limited Industrial	30.1	2.5	8.5	5.4	13.7		
Research-Technology Center	28.7	6.0	14.1	8.6			
Industrial Total	569.6	12.8	49.3	22.2	45.0	83.6	356.6
Intensive Development Sector	142.6	0.8	6.7	12.0	17.1	16.5	89.4
Mixed Use Total	142.6	0.8	6.7	12.0	17.1	16.5	89.4
Public-Institutional	55.0	1.2	3.4	6.5	21.7	22.2	
Pub/Inst Total	55.0	1.2	3.4	6.5	21.7	22.2	
Low Density Residential	1,947.4	122.4	208.9	217.4	126.8	560.2	711.6
Medium Density Residential	241.9	18.5	20.1			107.3	95.9
Medium-High Density Residential	67.2	3.7	5.6	15.1	18.8	24.1	
High Density Residential	2.9	1.8	1.2				
Residential Total	2,259.4	146.4	235.7	232.5	145.6	691.6	807.6
Grand Total	3,390.5	179.1	360.5	307.2	272.0	844.4	1,427.3

Notes:
1/Does not include partially vacant land

Table E-15. Number of Fully Vacant Parcels by Plan Designation and Size Class

All land inside the Corvallis UGB

	Count of Parcels						
Plan Designation	**Total Parcels**	**<1 Acre**	**1-4 Acres**	**5-9 Acres**	**10-19 Acres**	**20-49 Acres**	**50 or More Acres**
Agriculture	1						1
Conservation	34	11	14	5	3	1	
Ag/OS Total	35	11	14	5	3	1	1
Central Business District	11	11					
Linear Commercial	22	17	4	1			
Professional Office	24	18	6				
Shopping Area	15	6	8	1			
Comm/Office Total	72	52	18	2			
General Industrial	32	10	11	2	3	2	4
Intensive Industrial	5		2			1	2
Limited Industrial	13	8	3	1	1		
Research-Technology Center	17	10	5	2			
Industrial Total	67	28	21	5	4	3	6
Intensive Development Sector	9	2	2	2	1	1	1
Mixed Use Total	9	2	2	2	1	1	1
Public-Institutional	10	3	3	1	2	1	
Pub/Inst Total	10	3	3	1	2	1	
Low Density Residential	614	440	98	34	11	21	10
Medium Density Residential	132	117	10			4	1
Medium-High Density Residential	41	32	5	2	1	1	
High Density Residential	9	8	1				
Residential Total	796	597	114	36	12	26	11
Grand Total	989	693	172	51	22	32	19

Notes:
1/Does not include partially vacant land

Table E-16. Acres in Fully Vacant Parcels by Plan Designation and Size Class

All land inside the Corvallis City Limit

	Vacant, Unconstrained Acres						
Plan Designation	**Total**	**<1**	**1-4**	**5-9**	**10-19**	**20-49**	**50 or More**
Linear Commercial	14.2	3.9	7.3	3.0			
Professional Office	15.8	5.8	9.9				
Shopping Area	33.8	2.4	21.7	9.8			
Comm/Office Total	63.8	12.1	38.9	12.8	0.0	0.0	0.0
General Industrial	297.3	3.4	18.6	8.2	10.1	67.1	189.9
Limited Industrial	30.1	2.5	8.5	5.4	13.7		
Research-Technology Center	28.7	6.0	14.1	8.6			
Industrial Total	356.1	11.8	41.2	22.2	23.9	67.1	189.9
Public-Institutional	32.7	1.1	3.4	6.5	21.7		
Pub/Inst Total	32.7	1.1	3.4	6.5	21.7	0.0	0.0
Low Density Residential	531.0	99.3	43.4	67.3	31.6	117.5	172.0
Medium Density Residential	200.4	18.5	15.1			70.9	95.9
Medium-High Density Residential	37.5	3.7	5.0	10.0	18.8		
High Density Residential	2.9	1.8	1.2				
Residential Total	771.8	123.2	64.7	77.2	50.4	188.4	267.9
Grand Total	1,224.3	148.2	148.2	118.8	96.0	255.4	457.9

Table E-17. Number of Fully Vacant Parcels by Plan Designation and Size Class

All land inside the Corvallis City Limit

	Count of Parcels						
Plan Designation	**Total Parcels**	**<1 Acre**	**1-4 Acres**	**5-9 Acres**	**10-19 Acres**	**20-49 Acres**	**50 or More Acres**
Conservation	9	3	6				
Ag/OS Total	9	3	6	0	0	0	0
Central Business District	11	11					
Linear Commercial	22	17	4	1			
Professional Office	24	18	6				
Shopping Area	15	6	8	1			
Comm/Office Total	72	52	18	2	0	0	0
General Industrial	23	7	9	2	1	2	2
Limited Industrial	13	8	3	1	1		
Research-Technology Center	17	10	5	2			
Industrial Total	53	25	17	5	2	2	2
Public-Institutional	8	2	3	1	2		
Pub/Inst Total	8	2	3	1	2	0	0
Low Density Residential	431	388	24	10	3	4	2
Medium Density Residential	128	116	9			2	1
Medium-High Density Residential	38	32	4	1	1		
High Density Residential	9	8	1				
Residential Total	606	544	38	11	4	6	3
Grand Total	748	626	82	19	8	8	5

Table E-18. Vacant and Partially Vacant Residential Land by Lot Type and Plan Designation
All land inside the Corvallis UGB

Plan Designation	Number of Parcels	Acres				
		Total	Unavail. for Dev.	Gross Avail. for Dev.	Con-strained	Net Avail. for Dev.
Inside the city limit						
Platted Lots						
Low Density	603	429.7	55.2	374.5	40.6	333.9
Medium Density	122	62.9	4.7	58.2	18.9	39.4
Medium-High Density	21	24.8		24.8	2.7	22.1
High Density	6	2.8		2.8	0.5	2.3
Subtotal	752	520.2	59.9	460.3	62.7	397.6
Unplatted Lots						
Low Density	424	702.6	66.4	636.2	69.3	566.9
Medium Density	100	634.6	17.1	617.5	78.2	539.2
Medium-High Density	45	35.6	6.2	29.4	8.2	21.3
High Density	10	9.5	2.5	7.0	2.0	5.0
Subtotal	579	1,382.3	92.2	1,290.0	157.7	1,132.4
City Limit Total	1,331	1,902.4	152.1	1,750.3	220.3	1,530.0
Urban Fringe						
Platted Lots						
Low Density	119	322.2	34.5	287.7	27.6	260.1
Medium Density	4	11.0	1.5	9.5	2.9	6.6
Medium-High Density	1	5.1		5.1		5.1
Subtotal	124	338.3	36.0	302.3	30.5	271.9
Unplatted Lots						
Low Density	389	3,307.9	132.2	3,175.7	460.9	2,714.8
Medium Density	8	113.8	2.5	111.3	24.1	87.2
Medium-High Density	5	61.0	1.5	59.5	8.5	51.0
Subtotal	402	3,482.7	136.2	3,346.5	493.4	2,853.1
Urban Fringe Subtotal	526	3,821.0	172.2	3,648.8	523.9	3,124.9
Grand Total	**1,857**	**5,723.4**	**324.3**	**5,399.1**	**744.2**	**4,654.9**

Notes:
1/ Platted lots are vacant or partially vacant lots in existing subdivisions. These lots represent infill potential.
2/ Unplatted lots are lots that did not have a subdivision associated with them in the assessment database. They can be thought of as residential "tracts" that can be subdivided.

Table E-19. Vacant and Partially Vacant Residential Land by Development Status
All land inside the Corvallis UGB

Type	Number of Parcels	Acres Total	Unavail. for Dev.	Gross Avail. for Dev.	Con-strained	Net Avail. for Dev.
City Limit						
Vacant	420	213.7		213.7		213.7
Vacant Constrained	186	651.1		651.1	93.0	558.1
Partially Vacant	483	474.3	102.2	372.0		372.0
Partially Vacant Constrained	242	563.4	49.9	513.5	127.3	386.2
Subtotal	1,331	1,902.4	152.1	1,750.3	220.3	1,530.0
Urban Fringe						
Vacant	124	712.2		712.2		712.2
Vacant Constrained	66	1,044.9		1,044.9	269.6	775.3
Partially Vacant	219	742.8	109.5	633.3		633.3
Partially Vacant Constrained	117	1,321.0	62.7	1,258.4	254.3	1,004.0
Subtotal	526	3,821.0	172.2	3,648.8	523.9	3,124.9
Total	**1,857**	**5,723.4**	**324.3**	**5,399.1**	**744.2**	**4,654.9**

Notes:
1/ Development status refers to the land classification system used to evaluate land supply. All parcels were classified into mutually exclusive categories depending on whether improvements exist, the lot coverage of those improvements, and the parcel size.

Table E-20. Vacant and Partially Vacant Non-Residential Land by Plan Designation
All vacant and partially vacant commercial and industrial land inside the UGB

Plan Designation	Number of Parcels	Acres Total	Unavail. for Dev.	Gross Avail. for Dev.	Con-strained	Net Avail. for Dev.
Inside City Limit						
Central Business District	15	6.1	1.9	4.2	0.9	3.2
Linear Commercial	82	97.1	47.7	49.4	8.1	41.3
Professional Office	35	44.6	5.8	38.8	6.6	32.2
Shopping Area	29	76.0	10.4	65.6	1.5	64.0
Comm/Office Total	161	223.7	65.8	157.9	17.2	140.8
General Industrial	61	718.7	171.4	547.3	67.1	480.2
Intensive Industrial	3	15.3	8.7	6.6		6.6
Limited Industrial	22	45.3	2.1	43.2	7.0	36.3
Research-Technology Center	25	76.5	23.8	52.7	7.3	45.4
Industrial Total	111	855.9	206.1	649.8	81.4	568.4
Subtotal	272	1,079.6	271.9	807.7	98.6	709.2
Urban Fringe						
General Industrial	29	574.7	10.0	564.7	75.7	489.0
Intensive Industrial	19	228.1	53.8	174.4	49.5	124.8
Industrial Total	48	802.8	63.8	739.0	125.2	613.9
Subtotal	48	802.8	63.8	739.0	125.2	613.9
Grand Total	**320**	**1,882.4**	**335.6**	**1,546.8**	**223.7**	**1,323.0**

Table E-21. Vacant and Partially Vacant Non-Residential Land by Zoning District

All vacant and partially vacant commercial and industrial land inside the city limit

		Acres				
Zoning District	Number of Parcels	Total	Unavail. for Dev.	Gross Avail. for Dev.	Con-strained	Net Avail. for Dev.
Central Business	9	4.0	1.9	2.1		2.1
Central Business Fringe	9	3.4	0.4	3.0	1.8	1.2
Community Shopping	14	53.6	6.2	47.4		47.4
Linear Commercial	84	100.8	48.7	52.0	8.1	43.9
Professional and Administrative Office	31	33.8	5.8	28.1	4.6	23.5
Shopping Area	14	20.6	3.4	17.2	1.1	16.1
Special Shopping	4	4.4	1.0	3.4	0.5	2.9
Comm/Office Total	165	220.6	67.4	153.2	16.1	137.1
General Industrial	62	607.8	34.7	573.2	70.8	502.4
Intensive Industrial	5	18.3	9.3	9.0	0.6	8.4
Limited Industrial	19	17.6	2.1	15.5	2.7	12.8
Research Technology Center	22	75.2	23.6	51.6	7.2	44.4
Industrial Total	108	718.9	69.6	649.2	81.3	567.9
Grand Total	273	939.5	137.1	802.4	97.4	705.0

Table E-22. Developed Land by Imp/Land Value Ratio (entire UGB)

All Developed Industrial, Commercial, or Multifamily Residential Parcels inside the UGB

	Acres				
Description	Comm/ Office	Ind.	Res.	Total Acres	Percent of Total Acres
Parcels with more redevelopment potential					
Land Value 0, Bldg Value 0	2.2	71.0	13.4	86.6	8.0%
Land Value 0, Bldg Value > 0	8.2	16.0	0.7	24.9	2.3%
Imp/Land Ratio Between > 0 and < .25:1	36.4	155.7	26.4	218.5	20.1%
Imp/Land Ratio Between .25:1 and .5:1	15.5	23.9	3.7	43.1	4.0%
Imp/Land Ratio Between .5:1 and 1:1	53.8		33.0	86.8	8.0%
Subtotal	115.9	266.7	77.2	459.8	42.2%
Parcels with less redevelopment potential					
Imp/Land Ratio Between 1:1 and 2:1	82.4	3.7	99.2	185.3	17.0%
Imp/Land Value Between 2:1 and 3:1	36.7	24.3	102.5	163.5	15.0%
Imp/Land Value > 3:1	52.0	51.7	176.5	280.2	25.7%
Subtotal	171.1	79.8	378.1	629.0	57.8%
Total	287.0	346.5	455.3	1,088.8	100.0%

Notes:
1/ Includes developed parcels and developed portions of partially developed parcels in commercial, industrial and multifamily residential (RS12, RS20) districts
2/ Imp/land value ratios based on 1996 assessor's data

Table E-23. Developed Land by Imp/Land Value Ratio by Area (city limit & urban fringe)
All Developed Industrial, Commercial, or Multifamily Residential Parcels inside the UGB

	Acres				
Description	Comm/ Office	Ind.	Res.	Total Acres	Percent of Total Acres
Inside City Limit					
Parcels with more redevelopment potential					
Land Value 0, Bldg Value 0	2.2		13.4	15.5	1.4%
Land Value 0, Bldg Value > 0	7.7	14.9	0.7	23.3	2.1%
Imp/Land Ratio Between > 0 and < .25:1	36.4	141.4	26.4	204.2	18.8%
Imp/Land Ratio Between .25:1 and .5:1	15.2	6.6	3.7	25.5	2.3%
Imp/Land Ratio Between .5:1 and 1:1	53.3		33.0	86.3	7.9%
Subtotal	114.6	163.0	77.2	354.8	32.6%
Parcels with less redevelopment potential					
Imp/Land Ratio Between 1:1 and 2:1	81.4	3.2	99.2	183.8	16.9%
Imp/Land Value Between 2:1 and 3:1	34.5	2.1	102.5	139.2	12.8%
Imp/Land Value > 3:1	44.8	48.9	176.5	270.2	24.8%
Subtotal	160.7	54.3	378.1	593.1	54.5%
City Limit Total	275.4	217.2	455.3	947.9	87.1%
Urban Fringe					
Parcels with more redevelopment potential					
Land Value 0, Bldg Value 0		71.0		71.0	6.5%
Land Value 0, Bldg Value > 0	0.5	1.0		1.5	0.1%
Imp/Land Ratio Between > 0 and < .25:1		14.3		14.3	1.3%
Imp/Land Ratio Between .25:1 and .5:1	0.3	17.3		17.6	1.6%
Imp/Land Ratio Between .5:1 and 1:1	0.5			0.5	0.0%
Subtotal	1.3	103.7		105.0	9.6%
Parcels with less redevelopment potential					
Imp/Land Ratio Between 1:1 and 2:1	1.0	0.5		1.5	0.1%
Imp/Land Value Between 2:1 and 3:1	2.1	22.2		24.3	2.2%
Imp/Land Value > 3:1	7.2	2.8		10.0	0.9%
Subtotal	10.3	25.6		35.9	3.3%
Urban Fringe Total	11.6	129.3		140.8	12.9%
Total	**287.0**	**346.5**	**455.3**	**1,088.8**	100.0%

Notes:
1/ Includes developed parcels and developed portions of partially developed parcels in commercial, industrial and multifamily residential (RS12, RS20) districts
2/ Imp/land value ratios based on 1996 assessor's data

Table E-24. Land Owned by Top 10 Employers

Classification	Number of Parcels	Acres				
		Total Acres	Developed Acres	Vacant Acres	Const. Vacant Acres	Unconst. Vacant Acres
Developed	413	3,587.4	3,587.4			
Partially Vacant	12	53.6	5.7	47.8		47.8
Partially Vacant Constrained	4	160.4	160.4			
Undevelopable Vacant	17	0.8	0.8			
Vacant	9	15.5		15.5		15.5
Vacant Constrained	12	17.3		17.3	2.4	14.9
Total	**467**	**3,835.0**	**3,754.3**	**80.6**	**2.4**	**78.3**

Notes:
1/ Development status refers to the land classification system used to evaluate land supply. All parcels were classified into mutually exclusive categories depending on whether improvements exist, the lot coverage of those improvements, and the parcel size.

Table E-25. Vacant and Partially Vacant Land by Generalized Designation and Subarea
All land inside the Corvallis UGB

Generalized Plan Designation/ Subarea	Number of Parcels	Acres				
		Total	Unavail. for Dev.	Gross Avail. for Dev.	Con-strained	Net. Avail. for Dev.
Comm/Office	39	34.3	19.9	14.4	3.9	10.6
Industrial	5	18.0	2.0	16.0		16.0
Residential	60	24.2	8.1	16.1	0.8	15.3
CL Total	104	76.5	30.0	46.5	4.7	41.9
Comm/Office	68	94.5	35.0	59.4	8.2	51.2
Pub/Inst	11	61.5	3.0	58.5	0.4	58.1
Residential	143	143.0	15.4	127.5	10.5	117.0
NCL Total	222	298.9	53.4	245.4	19.2	226.3
Comm/Office	6	20.0	1.5	18.5		18.5
Industrial	20	232.5	146.0	86.4	10.5	75.9
Residential	30	72.1	1.6	70.5	36.4	34.1
NEL Total	56	324.5	149.1	175.4	46.9	128.4
Ag/OS	9	55.5	1.5	54.0	8.7	45.3
Industrial	14	157.4	5.0	152.4	8.0	144.4
Mixed Use	32	247.6	15.0	232.6	52.8	179.8
Pub/Inst	2	22.3		22.3	0.0	22.3
Residential	276	2,309.3	88.0	2,221.3	268.8	1,952.5
NF Total	333	2,792.1	109.5	2,682.6	338.3	2,344.3
Ag/OS	8	13.9		13.9	4.3	9.6
Comm/Office	14	21.7	2.0	19.7	2.8	16.9
Pub/Inst	2	8.5		8.5	0.9	7.6
Residential	504	714.9	46.2	668.7	67.1	601.6
NWL Total	528	759.0	48.2	710.8	75.0	635.8
Ag/OS	36	419.4	13.6	405.8	49.8	356.0
Industrial	6	15.8	2.5	13.3	0.5	12.7
Residential	105	315.8	30.0	285.8	11.0	274.8
SCF Total	147	750.9	46.1	704.9	61.4	643.5
Industrial	23	519.5	8.0	511.4	76.0	435.5
Residential	56	362.1	21.0	341.1	65.9	275.2
SF Total	79	881.6	29.0	852.6	141.9	710.7
Comm/Office	15	15.5	3.7	11.8	1.8	10.0
Industrial	61	529.0	34.2	494.7	63.6	431.2
Residential	205	320.6	27.1	293.5	65.5	228.1
SL Total	281	865.1	65.0	800.1	130.8	669.2
Ag/OS	4	3.6	0.6	3.0	0.9	2.1
Comm/Office	19	37.8	3.7	34.1	0.5	33.6
Industrial	25	76.5	23.8	52.7	7.3	45.4
Pub/Inst	2	6.8	0.5	6.3		6.3
Residential	389	627.7	53.7	574.0	40.1	533.9
SWL Total	439	752.4	82.3	670.0	48.9	621.2
Ag/OS	4	7.4	0.5	6.9	4.1	2.7
Industrial	5	110.2	48.2	62.0	40.7	21.3
Mixed Use	13	365.4	3.0	362.4	77.7	284.7
Residential	85	827.6	31.7	796.0	175.2	620.7
WF Total	107	1,310.6	83.4	1,227.2	297.8	929.4
No Data	1	66.0	66.0			
Residential	4	6.1	1.5	4.6	2.9	1.7
Not Avail Total	5	72.1	67.5	4.6	2.9	1.7
Grand Total	2,301	8,883.7	763.6	8,120.1	1,167.6	6,952.5

Notes:
1/ Includes partially vacant parcels, see subarea map

Table E-26. Jackson/Frazier & Squaw Creek Basin Wetland Summary

Basin	Total Acres	Total Acres in Hydric Soils	Total Significant Wetlands	Total Probable Wetlands	Sig/total Acres	Prob/Total Acres	Sig/ Hydric Acres	Prob/ Hydric Acres
FRAZIER	985.9	272.1	77.3	97.2	7.8%	9.9%	28.4%	35.7%
JACKSON	1,096.0	352.2	34.3	255.0	3.1%	23.3%	9.7%	72.4%
SQUAW_CR	2,113.4	400.2	203.5	97.1	9.6%	4.6%	50.9%	24.3%
	4,195.2	1,024.5	315.1	449.3	7.5%	10.7%	30.8%	43.8%

Values applied to hydric soils in all other basins except the Airport basin:
- 30.8% of hydric soils are significant wetlands (no development)
- 43.8% of hydric soils are probably wetlands (development @ 50% of allowable density)

Table E-27. Constraint Summary of Vacant and Partially Vacant Land (entire UGB)
All land inside the Corvallis UGB

	Acres										
				Constrained Land							
Plan Designation	Total	Unavail. For Dev.	Avail. For Dev.	Con-strained	Elevation	100-year Flood-plain	Riparian Corridors	Hydric Soils	Nat. Wetlands Inv.	Sig. Wetlands	Prob. Wetlands
Agriculture	1,133.1	957.4	175.7	2.0	97.7	206.8	4.1	263.2	26.0	1.2	9.6
Conservation	1,103.6	795.5	308.2	66.0	107.4	531.2	106.1	196.8	54.9	42.9	32.6
Ag/OS Total	2,236.7	1,752.9	483.8	68.0	205.1	737.9	110.2	460.0	80.9	44.1	42.2
Central Business District	102.1	97.9	4.2	0.9	0.0	21.2	7.7	8.3	3.8	0.2	0.3
Linear Commercial	193.4	143.9	49.6	8.3	0.0	43.1	17.5	122.0	0.0	20.5	29.2
Professional Office	56.5	17.7	38.8	6.6	0.0	7.5	3.0	18.2	0.0	3.4	4.9
Shopping Area	118.1	52.5	65.6	1.5	0.0	4.5	0.6	43.8	1.9	6.3	16.3
Comm/Office Total	470.1	312.0	158.1	17.4	0.0	76.3	28.8	192.2	5.7	30.5	50.7
General Industrial	1,477.5	365.5	1,112.0	142.8	0.0	177.5	35.1	816.2	25.4	37.9	80.7
Intensive Industrial	256.9	76.0	181.0	49.5	0.0	8.5	2.3	128.2	32.3	41.9	25.5
Limited Industrial	56.2	13.0	43.2	7.0	0.0	22.2	0.0	17.7	0.0	4.1	5.8
Research-Technology Center	89.4	36.7	52.7	7.3	0.0	13.5	0.2	13.6	5.8	9.8	0.0
Industrial Total	1,880.0	491.2	1,388.8	206.6	0.0	221.6	37.6	975.6	63.4	93.7	111.9
Intensive Development Sector	629.9	34.9	595.1	130.5	0.0	19.0	0.0	117.3	15.1	80.5	54.6
Mixed Use Total	629.9	34.9	595.1	130.5	0.0	19.0	0.0	117.3	15.1	80.5	54.6
No Data	66.0	66.0	0.0	0.0	0.3	35.2	31.2	9.5	4.7	0.4	0.0
No Data Total	66.0	66.0	0.0	0.0	0.3	35.2	31.2	9.5	4.7	0.4	0.0
Public-Institutional	2,278.8	2,183.2	95.6	1.3	0.0	236.9	23.9	1,275.9	4.3	25.5	13.7
Pub/Inst Total	2,278.8	2,183.2	95.6	1.3	0.0	236.9	23.9	1,275.9	4.3	25.5	13.7
High Density Residential	219.3	209.6	9.7	2.4	0.0	20.8	2.9	108.3	0.4	6.3	1.6
Low Density Residential	6,933.3	2,445.0	4,488.3	612.4	126.5	284.9	61.7	1,246.9	91.4	282.4	604.5
Medium Density Residential	1,173.8	376.8	797.0	124.5	12.8	69.7	14.1	362.2	1.3	75.7	110.6
Medium-High Density Residential	365.9	247.0	118.9	19.4	0.0	50.9	3.1	171.3	6.1	10.9	19.7
Residential Total	8,692.3	3,278.4	5,413.9	758.6	139.3	426.4	81.8	1,888.8	99.3	375.3	736.4
Grand Total	**16,253.9**	**8,118.5**	**8,135.3**	**1,182.5**	**344.7**	**1,753.3**	**313.5**	**4,919.3**	**273.4**	**649.9**	**1,009.5**

Notes:
1/ constraints may add up to more than total constraints or total parcel size because of constraint overlap. For example, lands in riparian areas may also be in significant or probable wetlands and floodplains.

Table E-28. Constraint Summary of Vacant and Partially Vacant Land (city limit)
All land inside the Corvallis city limit

	Acres											
				Constrained Land								
Plan Designation	**Total**	**Unavail. For Dev.**	**Avail. For Dev.**	**Con-strained**	**Elevation**	**100-year Flood-plain**	**Riparian Corridors**	**Hydric Soils**	**Nat. Wetlands Inv.**	**Sig. Wetlands**	**Prob. Wetlands**
Conservation	491.1	473.9	17.2	5.4	0.0	247.9	40.5	101.9	67.2	23.7	5.9
Ag/OS Total	491.1	473.9	17.2	5.4	0.0	247.9	40.5	101.9	67.2	23.7	5.9
Central Business District	102.1	97.9	4.2	0.9	0.0	21.2	3.8	8.3	7.7	0.2	0.3
Linear Commercial	193.4	143.9	49.6	8.3	0.0	43.1	0.0	122.0	17.5	20.5	29.2
Professional Office	56.5	17.7	38.8	6.6	0.0	7.5	0.0	18.2	3.0	3.4	4.9
Shopping Area	118.1	52.5	65.6	1.5	0.0	4.5	1.9	43.8	0.6	6.3	16.3
Comm/Office Total	470.1	312.0	158.1	17.4	0.0	76.3	5.7	192.2	28.8	30.5	50.7
General Industrial	859.7	312.4	547.3	67.1	0.0	143.5	17.4	418.5	34.6	22.3	43.8
Intensive Industrial	21.1	14.5	6.6	0.0	0.0	4.8	1.5	1.2	2.3	0.0	0.0
Limited Industrial	56.2	13.0	43.2	7.0	0.0	22.2	0.0	17.7	0.0	4.1	5.8
Research-Technology Center	89.4	36.7	52.7	7.3	0.0	13.5	5.8	13.6	0.2	9.8	0.0
Industrial Total	1,026.4	376.6	649.8	81.4	0.0	183.9	24.7	451.0	37.1	36.2	49.6
Public-Institutional	769.7	696.4	73.3	1.3	0.0	66.9	2.8	326.8	23.9	3.1	6.1
Pub/Inst Total	769.7	696.4	73.3	1.3	0.0	66.9	2.8	326.8	23.9	3.1	6.1
High Density Residential	219.3	209.6	9.7	2.4	0.0	20.8	0.4	108.3	2.9	6.3	1.6
Low Density Residential	2,823.5	1,801.2	1,022.3	121.4	30.0	104.3	16.8	690.4	61.6	78.7	68.8
Medium Density Residential	1,045.4	369.2	676.2	97.5	12.8	64.4	0.9	310.0	14.1	60.5	89.1
Medium-High Density Residential	299.7	245.5	54.2	10.9	0.0	47.5	6.1	156.5	1.4	6.4	13.2
Residential Total	4,388.0	2,625.5	1,762.5	232.3	42.8	237.1	24.3	1,265.2	79.9	151.8	172.7
Grand Total	7,145.3	4,484.5	2,660.9	337.7	42.8	812.1	98.0	2,337.1	237.0	245.3	285.0

Notes:
1/ constraints may add up to more than total constraints or total parcel size because of constraint overlap. For example, lands in riparian areas may also be in significant or probable wetlands and floodplains.

Table E-29. Constraint Summary of Vacant and Partially Vacant Land (urban fringe)
All land inside the Corvallis urban fringe

	Acres										
				Constrained Land							
Plan Designation	Total	Unavail. For Dev.	Avail. For Dev.	Con-strained	Elevation	100-year Flood-plain	Riparian Corridors	Hydric Soils	Nat. Wetlands Inv.	Sig. Wetlands	Prob. Wetlands
Agriculture	1,133.1	957.4	175.7	2.0	97.7	206.8	26.0	263.2	4.1	1.2	9.6
Conservation	612.5	321.5	291.0	60.6	107.4	283.3	14.5	95.0	38.9	19.2	26.7
Ag/OS Total	1,745.6	1,279.0	466.7	62.6	205.1	490.1	40.5	358.2	43.0	20.4	36.3
General Industrial	617.8	53.1	564.7	75.7	0.0	34.0	8.0	397.6	0.5	15.5	36.9
Intensive Industrial	235.8	61.5	174.4	49.5	0.0	3.7	30.7	127.0	0.0	41.9	25.5
Industrial Total	853.6	114.6	739.0	125.2	0.0	37.7	38.7	524.6	0.5	57.5	62.3
Intensive Development Sector	629.9	34.9	595.1	130.5	0.0	19.0	15.1	117.3	0.0	80.5	54.6
Mixed Use Total	629.9	34.9	595.1	130.5	0.0	19.0	15.1	117.3	0.0	80.5	54.6
No Data	66.0	66.0	0.0	0.0	0.3	35.2	4.7	9.5	31.2	0.4	0.0
No Data Total	66.0	66.0	0.0	0.0	0.3	35.2	4.7	9.5	31.2	0.4	0.0
Public-Institutional	1,509.1	1,486.8	22.3	0.0	0.0	170.0	1.5	949.1	0.0	22.4	7.5
Pub/Inst Total	1,509.1	1,486.8	22.3	0.0	0.0	170.0	1.5	949.1	0.0	22.4	7.5
Low Density Residential	4,109.8	643.8	3,466.0	491.0	96.5	180.6	74.6	556.5	0.1	203.7	535.7
Medium Density Residential	128.4	7.6	120.8	26.9	0.0	5.3	0.4	52.2	0.0	15.2	21.5
Medium-High Density Residential	66.1	1.5	64.6	8.5	0.0	3.4	0.0	14.9	1.7	4.6	6.5
Residential Total	4,304.3	652.9	3,651.4	526.4	96.5	189.3	75.0	623.6	1.8	223.4	563.7
Grand Total	9,108.5	3,634.0	5,474.5	844.7	301.9	941.2	175.4	2,582.2	76.5	404.6	724.5

Notes:
1/ constraints may add up to more than total constraints or total parcel size because of constraint overlap. For example, lands in riparian areas may also be in significant or probable wetlands and floodplains.

Appendix F

Largest Employers

As part of our analysis of employment growth, we interviewed the largest employers in the City to get an estimate of their expected growth in employment and resulting need for land. Table F-1 shows the results.

Table F-1: 20-Year Outlook for the Nine Largest Employers in Corvallis

Employer	Employment Growth	Land Needed
OSU	0	none
Hewlett-Packard	1,000 max over ten years	none
School District 509J	0–25	none
Good Samaritan Hospital	increasing share of population	none
Corvallis Clinic		
City of Corvallis	100	15.8–30.8
EPA	0	none
Benton County	140 max	see note
CH2M Hill	150 max	none

Source: ECONorthwest.

Note: A 1995 assessment of facility land needs by the City and Benton County found that they would jointly require an additional 5.8 acres in Corvallis to accommodate anticipated employment growth. This table reports the 5.8 acres with the land needs of the City. This assessment assumes a new corrections facility will be built in downtown Corvallis-if it is developed outside of Corvallis, then the employment and land needs are overstated.

OREGON STATE UNIVERSITY

John Cook, Facilities Planner 737-4040

OSU does not expect any employment growth over the next twenty years, despite projected increases in student enrollment. There are several reasons for this:

- limited budget will constrain OSU's ability to hire additional faculty/staff
- only 50% of OSU's faculty/staff are affected by the level of enrollment; the other 50% are involved in research, which is not very dependent on enrollment levels
- OSU currently has some excess teaching capacity, and declines in research budgets may cause some faculty to shift into more teaching

Faculty/Staff and Enrollment at OSU, Various Years

Year	Enrollment	Faculty/Staff	Students:F/S
1981/82	14,227	3,861	
1989/90	15,637	4,283	
1990/91	15,958	4,675	
1991/92	16,024	4,299	
1995/96	14,181	3,975	

Source: John Cook, OSU Facilities Planner.

OSU's 1997/98 student enrollment is currently 14,500. OSU projected student enrollment levels in 1990; these projections are shown in the table below:

Projected Enrollment at OSU, by On/Off-Campus

Year	On-Campus	Off-Campus	Total
2000	3,3	14,6	18,00
2010	3,9	17,0	21,00
2020	4,5	19,4	24,00

Source: John Cook, OSU Facilities Planner, from 1990 enrollment projection.

Cook acknowledged that OSU is far behind the forecast, as they should be approaching the 18,000 mark but are far from it. He said that they've been expecting a flood of students but aren't sure why it has not materialized; it could be that the projections are off, that the share of young adults going to college is falling because of cost, or that OSU's market share is less than anticipated.

OSU is planning to build 250 units of family housing and an additional high-rise dorm, all on campus, to house additional students. OSU has enough land to accommodate the 30-year enrollment projection of 24,000. Even if employment increases OSU, John does not think the University will need to acquire more land over the twenty-year period of our analysis.

For more information on student housing, contact Tom Scheuermann, OSU Director of Housing, at 737-4771; contact Susan Weeks at OSSHE for more information on enrollment forecasts.

HEWLETT-PACKARD

Marcy Eastham 715-4176

The outlook for employment growth at HP's Corvallis location is "fairly flat." A 20-year outlook is uncertain because HP is in a dynamic industry, but HP's expectation over the next ten years is for slow employment growth of about 1,000 people.

HP is built out at their Corvallis site; if HP were to expand they would have to acquire land. There are no plans to acquire land or develop additional

buildings at this time. HP would accommodate anticipated employment growth (1,000 over ten years) in existing facilities.

Future expansion of HP's Corvallis site would depend, in part, on the availability of labor or affordable housing to accommodate in-migrants. If the workforce or affordable housing is not available, HP will expand elsewhere. Currently, 50% of HP's workforce lives outside of Corvallis because housing is too expensive. HP is having a problem recruiting workers at the engineer level and above because of housing costs. The problem is not the price level, but what you get for that price. For example, an engineer living in Omaha may have a $250,000 house that is 3,500 sq. ft., but in Oregon that same $250,000 buys only 2,500 sq. ft.

SCHOOL DISTRICT 509J

Dennis Jones 757-5877
P.O. Box 3509J
Corvallis, OR 97339

School District employment is tied to the level of school enrollment. The outlook for school enrollment through 2005/6 is a decline in all grades, with total enrollment falling from about 7,600 now to a plateau of about 7,300. The demographics of population growth in Corvallis is causing enrollment to fall despite increased population, employment, and dwelling units. The primary causes are:

- No affordable housing in Corvallis. While Corvallis will add jobs that attract new adults of childbearing age to the area, many of these people will not live in Corvallis because its too expensive.
- The "graying trend." The population in Oregon is getting older, so a smaller share of adults are of childbearing age. Jones has heard that Corvallis is graying at something like eight times the rate of Oregon.
- Largest employers are growing slowly. OSU & HP are the area's largest employers, and both are not expected to grow significantly. HP is built out at their site, and flat growth at HP means flat growth for other firms that supply or are tied to HP, like Micro.

Potential development of Timber Hill may create a need for a new facility in the northwest portion of Corvallis. Timber Hill has the city's largest parcel of undeveloped residential land; under existing zoning this land could be developed into 2,500–2,600 single-family homes. Schools in this part of town are already overburdened, and new development of this magnitude could create the need for additional facilities, especially if some of the new housing is affordable. The City owns 18 acres on Timber Hill that is designated "institutional" in the Comp Plan, however planning commission minutes state that this land is set aside for schools. There are currently talks with the developer about development of Timber Hill, and the 18 acres will probably be some combination of school, park, and wetlands. The developer has indicated that they will build 140 single-family homes in the near future.

Two trends may create the need for new facilities: 1) technology in the classroom is creating the need for more space and flexibility than is available

in older buildings, and 2) the cry for smaller class sizes. If the District develops new facilities to address these issues, it would be additions to existing schools, not development of new schools. These trends, plus the overburdened state of schools in the northwest portion of Corvallis, may create the need for a new school in that area. At this time, however, the District is not advocating for a new facility.

The District also has the right of first refusal on a 15-acre parcel in the Rivergreen annexation in south Corvallis. The District must exercise its right by November 1999. The Rivergreen annexation is 137 acres, and the proposed Comp Plan calls for development of single-family, multi-family, and manufactured housing. Development of this housing has the potential to attract households with children, especially to the extent that it is affordable. The elementary school serving this area is currently operating at about 50% capacity, with room for another 230 students (in part because of the District's open enrollment policy). Given this capacity, and the location of the 15-acre parcel in the extreme south end of the UGB, it is not financially feasible to buy this property at this time. The District is monitoring development in this area to see if the situation warrants buying this parcel.

The District is selling an 11-acre parcel just outside of the UGB to the southwest to raise money for future acquisitions of land elsewhere. This land is currently used for the high school agriculture program. The potential buyers have said they would try to have this parcel annexed to the City for future development.

GOOD SAMARITAN HOSPITAL

Dan Preller, 757-5280

Preller will search for any projections of employment, but he does not know of any at this time. He thinks that forecasting their employment as a constant share of population would underestimate actual employment, because many patients are from out of the area, and Good Samaritan is expanding services, such as open heart surgery, that have very large market areas.

Good Samaritan owns 88 acres on the hill, so there is plenty of room for the hospital to expand. All future increases in Good Samaritan's employment in Corvallis can be accommodated on land the hospital already ownsThey are currently expanding the hospital by 12,500 sq. ft., and adding a small (5,500 sq. ft.) retail pharmacy. In the next couple of years the hospital expects to build a 32,000–42,000 sq. ft. wellness center and a medical office building on campus.

Good Samaritan may purchase additional land for development of a financial services center in Tangent or Albany. This building would be in Tangent or Albany because those locations are between Corvallis and Lebanon (Good Samaritan is merging with the Lebanon Community Hospital), and because the high cost of housing means that most of the financial services employees would not live in Corvallis. Preller estimates that 41% of Good Samaritan's employees live outside of Corvallis. The hospital is having a hard time recruiting medical personnel, because of both

the high cost of housing and a general shortage in the workforce. Preller agrees with Hewlett-Packard's observation—it's not the overall price level of housing, but the amount and quality of the housing one gets for the price.

EPA

Gordon Bollinger, 754-4652

Future employment levels are uncertain because it depends on funding allocated by Congress. At this time, Bollinger does not see much change; he anticipates employment to be at about the same level as now.

If the EPA does expand in Corvallis, they probably would not purchase land to accommodate this expansion. They might expand onto OSU land directly behind their current office (the EPA already has one building on OSU land at this site), and the EPA owns about 10 acres near the water treatment plant that they could build on.

Future location decisions also depend on administrative decisions made in Washington, DC, but it is very likely that the EPA would remain in Corvallis because of it's unique research niche. EPA research is closely tied with research at OSU, both in Corvallis and in Newport at the Hatfield Marine Science Center.

BENTON COUNTY

John Anderson 757-6800

Given the funding outlook, Anderson thinks the outlook for Benton County employment growth is "fairly flat." Current County employment is 322 FTE, and he thinks one should project slow average growth rate off of that level.

Anderson does not think the County will need to acquire land to accommodate employment growth. The County currently owns the land behind the courthouse—this site may be used to construct an expanded corrections facility, but the County may decide to build that facility elsewhere because the site would offer no room for further expansion. If the corrections facility is not built on this site it would be logical for Benton County to use the site to construct offices and consolidate departments that are currently renting space elsewhere in Corvallis. This site is currently developed with a two-story apartment building, surface parking in the interior, and several one-story retail spaces on the street, some of which are being used by the County.

Another potential site for a new corrections facility is near the airport. A Citizens Task Force will make recommendations about the corrections facility. They will probably recommend a 100–125 bed facility, which would increase corrections staffing levels by 15% (current level is 17.5).

Anderson is not familiar with the City/County assessment of downtown space needs. Upon hearing which buildings were included in the analysis, he said that in addition to those buildings, the County has Public Works and Community Development staff in the Avery Building south of downtown.

CH2M HILL

Bill Irving, 752-4271

Irving anticipates that CH2M Hill can accommodate expected growth within existing land and facilities. They have 350 employees, and could handle as many as 500.

Appendix G

Methods for Revisions to the Land Needs Analysis

BACKGROUND

The City of Corvallis is going through "periodic review" of its comprehensive plan as required by the Land Conservation and Development Commission. As part of that review it must update its estimate of buildable land (residential and non-residential) and assess whether it has sufficient buildable land within its Urban Growth Boundary (UGB) to accommodate the next 20 years of development that expected growth in population and employment will require. In June, ECONorthwest submitted its final Buildable Lands Analysis to the City of Corvallis. The key conclusions of that report were:

- The City has ample land within its UGB to accommodate population and employment growth under a wide range of assumptions about the amount and characteristics of growth and land; and

- The City has sufficient land designated residential and industrial to accommodate expected growth, but some minor adjustments should be considered.

City staff and the Buildable Lands Committee reviewed these findings as part of their review of the City's comprehensive plan, and developed a series of comprehensive plan amendments. These proposed amendments include changes in plan designations for some land; in some cases the changes are to a new mixed-use plan designations approved by the Planning Commission.

Those plan changes mean that the June analysis of buildable land by plan designation is not longer entirely accurate. This appendix describes the methods used to revise the June land need and supply calculations to make them consistent with the City's recent changes to plan designation.

METHODS AND RESULTS

The June report presented demand calculations, supply estimates, and a comparison of supply and demand to determine areas where the City has a surplus or deficit of buildable land. We use a similar organization in this memorandum. Our revised calculations use the same basic definitions and assumptions described in the June report.

Many of the plan designation changes adopted by the Planning Commission are for new mixed use designations. Because we do not have historical data on mixed use development, it is difficult to develop estimates of land need for these designations. To be consistent with the methods used in the June report, we do not directly allocate population and employment to

mixed use designations. Rather, we did the calculations using the same methods we used in our first analysis, and then provide some estimates of the additional capacity the mixed zones provide.

DEMAND

The June report presented separate demand estimates for residential, employment (commercial/industrial), and public/institutional land. In that report, we used different methods to calculate demand for each of the three land types; we used the same methods in revising the demand estimates. The following sections describe revisions to the land demand.

RESIDENTIAL LAND

Residential land need is a function of population, household size, and density. For the purposes of our first run of the buildable lands report, we used the City Council adopted population projection of 58,461 for the year 2020. Since that time, Benton County has revised the population projection for Corvallis. The County recommends a coordinated 2020 population projection of 61,029 for Corvallis.

Department of Land Conservation and Development (DLCD) staff requested that we use 61,029 for the second run. The estimated 2020 housing need presented in the buildable lands report was 4,000 dwelling units. Table 1 shows our revised housing need estimate based on a 2020 population of 61,029. Assuming household size remains constant at 2.3 persons per dwelling unit, Corvallis will need an additional 5,110 dwelling units between 1996 and 2020.

Table 1. Population and Estimated Housing Need, 1996-2020

Variable	Number
Population 1996	49,275
Population 2020	61,029
Change, 1996-2020	11,754
Avg. Household Size (1990)	2.3
Total Needed Dwelling Units, 1996-2020	5,110

Source: CPRC, Benton County, Calculations by ECONorthwest

The next step in estimating needed housing units is to allocate units to specific plan designations. To allocate housing units to specific plan designations, we considered historic development by plan designation, land supply, and the market and demographic trends. Table 2 shows the percentage allocations of housing types to the City's residential plan designations.

Consistent with the methods used in the June report, for our initial allocation we did not allocate any residential need to mixed-use plan

designations. We recognize that mixed-use plan designations are intended to supply land to meet a portion of residential land need. Thus, we know that, other things being equal, we will underestimate the capacity of the revised plan to accommodate residential growth. We provide an estimate of the additional residential development potential of mixed-use designations in our comparison of need and supply.

Table 2. Allocation of Residential Units by Plan Designation[a]

Housing type	% of New Units by Plan Designation				Total
	Low Density	Medium Density	Medium-High Density	High Density	
Single-family					
Detached	30%	10%			40%
Manufactured	5%	5%			10%
Multi-family					
Row/townhouse		5%			5%
Duplex/Quad		5%	5%		10%
Apartment			25%	10%	35%
Total	**35%**	**25%**	**30%**	**10%**	**100%**

Source: ECONorthwest, 1998.

[a] Does not include allocations to mixed-use zones.

Table 3 shows the estimates of demand for housing units and land that these assumptions lead to. We base our land need estimates on our estimate of 5,100 dwelling units and the density assumptions used in the June report.

Table 3. Residential Land Need, 1996-2020[a]

Housing Type/ Plan Designation	Units	Expected Density DU/Net Acre	Net Acres	% of Gross Acre in Non-Res Use	Expected Density DU/Gross Acre	Gross Acres
Single Family						
Low Density	1,785	4.2	430	30%	3.2	558
Medium Density	765	8.2	94	30%	6.3	121
Subtotal	**2,550**	**4.9**	**523**	**30%**	**3.8**	**679**
Multi-Family						
Medium Density	510	8.2	62	25%	6.3	78
Medium-High Density	1,530	11.9	129	25%	9.5	161
High Density	510	24.4	21	25%	19.5	26
Subtotal	**2,550**	**12.0**	**212**	**25%**	**9.6**	**265**
Total	**5,100**	**7.0**	**735**	**30%**	**5.4**	**944**

Source: ECONorthwest, 1998.

[a] See ECO's June 98 report for details on assumptions about density, gross-to-net conversion factors, and so on.

COMMERCIAL/INDUSTRIAL

Demand for commercial and industrial land is a function of employment growth and density. Because no employment forecasts existed for Corvallis, we developed an employment forecast (presented in Appendix C of the June report). That forecast used Benton County employment forecasts developed by the Oregon Office of Economic Analysis (OEA) as a baseline. While City staff and the Buildable Lands Committee requested that we use the county coordinated population forecast in our revisions, they did not request that we modify the employment estimates. Nonetheless, the City would still have sufficient buildable industrial land if we were to revise the employment forecast a comparable amount as the population forecast; it might be a little short on commercial land.

PUBLIC/INSTITUTIONAL

Demand for public and institutional land is a function of population and other factors. Some types of public land, such as parks, may have specific standards. For others, such as city offices, land consumption is more difficult to estimate. In the June report we used a ratio of acres per 1,000 persons to estimate need for public and institutional land. Because the population forecast has changes, we need to revise the need estimates for public and institutional land.

Based on a population increase of 11,754, and a land need of about 77 acres per 1,000 persons, Corvallis will need about 672 net acres between 1996 and 2020. To convert from net gross acres, we used a factor of 10% (because less land is lost to internal roads for these uses than is lost for residential subdivisions). The result is a need for 739 gross acres.

SUPPLY

The buildable lands inventory presented in the June report was based on a complex set of decision rules. To simplify the revision process, and ensure the revisions are consistent with guidance provided by City staff and the Buildable Lands Committee, we used the June data as the basis for the revisions. The key change to the June database was the incorporation of the new plan designations. Those designations are described below.

NEW LAND USE DESIGNATIONS

For the purposes of the second run of this study, we used the Planning Commission's approved Draft Comprehensive Plan Map. This draft map contains several new land use designations that are not currently indicated on the existing Comprehensive Plan Map. The Buildable Lands Committee recommended the following definitions and assumptions be applied to the new map designations:

- *Mixed Use Residential.* These areas will provide for primarily residential uses but also will allow for some civic, commercial, and industrial uses that are compatible with the predominant residential

uses. These areas will provide for family and group residences at medium to high densities.

These areas are intended to act as a transition between Neighborhood Centers and residential land uses. The City assumes a split use of 75% residential, 20% commercial and 5% industrial for this land use designation.

- *Mixed Use Commercial.* These areas will provide for primarily commercial uses but also will allow for some civic and residential uses that are compatible with the predominant commercial uses, while maintaining the City's supply of commercially-designated lands.

  In general, existing developed commercial areas contain less residential use than greenfield sites. The City assumes a split use of 90% commercial and 10% residential for this land use designation.

- *Limited Industrial-Office.* These areas are intended to allow offices (civic and commercial use types) and limited industrial uses. These areas may act as a transition between general industrial and residential land uses. The City assumes a split use of 70% industrial and 30% office for this land use designation.

- *Mixed Use Employment.* These areas will provide for a variety of employment opportunities by allowing for primarily industrial uses but also will allow for some commercial, civic, and residential uses that are compatible with the predominant industrial uses, while maintaining the City's supply of industrially-designated lands. The City assumes a split use of 70% industrial, 20% commercial and 10% residential for this land use designation.

- *Intensive Development Sector (IDS).* The IDS includes areas in which more intensive development will be permitted after annexation. Uses include residential development in excess of six units per acre and neighborhood or community commercial development. We assume a split of 75% residential and 25% commercial for this land use designation.

REVISED BUILDABLE LAND ESTIMATE

LCOG staff began the revision process by incorporating the plan designation changes into the plan designation layer of the GIS. They then generated a database of tax lots with accompanying acreages. The original analysis assigned the dominant plan designation to each tax lot. At the request of staff and the Buildable Lands Committee, the second run analysis assigned multiple plan designations to individual tax lots.[1]

[1] In some instances tax lots were split by plan designations. In those cases, LCOG provided multiple records of the sub-tax lots with acreages corresponding to the area within each individual plan designation.

The revision process is probably better described as a reallocation process. For tax lots that have two or more plan designations (i.e., for split tax lots), we allocated vacant land based on the percentage of total acreage in each plan designation. For example, suppose a 1-acre tax lot has 0.3 acres designated for residential use and 0.7 acres designated for commercial use, and that it is partially developed, with 0.5 acres considered unconstrained buildable acres. Then 30% of the vacant portion (0.15 acre) would be allocated to residential and the remaining 0.35 acre (70%) would be allocated to commercial.

We recognize that this allocation method has a potential margin of error. That potential error only exists on split tax lots that are partially vacant. It is possible, and even probable, that all of the developed portion of a tax lot falls within a single plan designation on some tax lots. The number of partially vacant split tax lots (187) made it impossible for us to apply a more accurate method (i.e., review of orthophotographs or field verification) in the time provided. The 187 partially developed lots contained about 250 developed acres and 1,800 vacant acres. Thus the upper bound on mis-allocation of land would be about 250 acres. It is more likely, however, that the errors are a small fraction of that amount, as they are likely to offset and balance each other in the aggregate.

VACANT BUILDABLE LAND

Table 4 shows a summary of the plan designation changes. There were more than 2,000 changes on a total of 1,281 tax lots comprising 4,232 unconstrained buildable acres. The comprehensive plan map revisions included 670 plan designations that affected entire tax lots, and 611 revisions that assigned two or more plan designations to a tax lot. The multiple plan designations resulted in 1,374 individual plan designations on the 611 tax lots.

The plan designation changes result in an overall decrease of about 366 unconstrained buildable acres. All of the reduction in buildable acres is due to land moved into the Conservation designation which is not available for development. In other words, for all other buildable land the total amount did not change, but the allocation to different plan designations did change.

Table 4. Summary of Plan Designation Changes

Plan Designation	Original Vacant Acres (June)	Revised Vacant Acres	Change in Acres
Agriculture/Open Space			
Agriculture (A)	173.7	29.1	-144.6
Conservation (C)[a]	242.1	608.3	366.2
Subtotal	**173.7**	**29.1**	**-144.6**
Commercial			
Central Business District (CB)	3.2	3.2	0.0
Linear Commercial (LC)	41.3		-41.3
Professional Office (PO)	32.2	41.3	9.1
Shopping Area (SA)	64.0		-19.5
Subtotal	**140.8**	**44.5**	**-51.8**
Industrial			
General Industrial (GI)	969.2	799.5	-169.7
Intensive Industrial (II)	131.4	137.6	6.2
Limited Industrial (LI)	36.3	10.9	-25.4
Research-Technology Center (RTC)	45.4	65.4	20.0
Subtotal	**1,182.3**	**1,013.3**	**-168.9**
Mixed Use			
Intensive Development Sector (IDS)	464.5	215.7	-248.8
Limited Office-Industrial (LIO)	NA	123.3	123.3
Mixed Use Commercial (MUC)	NA	137.0	137.0
Mixed Use Employment (MUE)	NA	52.5	52.5
Mixed Use Residential (MUR)	NA	83.6	83.6
Subtotal	**464.5**	**612.1**	**147.6**
Public-Institutional			
Public-Institutional (PI)	**94.3**	**72.0**	**-22.3**
Residential			
Low Density Residential (LD)	3,876.0	3,663.9	-212.0
Medium Density Residential (MD)	672.5	656.3	-16.2
Medium-High Density Residential (MHD)	99.5	247.2	147.7
High Density Residential (HD)	7.3	6.0	-1.2
Subtotal	**4,655.2**	**4,573.5**	**-81.7**
TOTAL	**6,710.7**	**6,344.6**	**-366.2**

Source: LCOG Analysis of Corvallis GIS Data

[a] Vacant land in the Conservation designation is not available for development and not included in the totals.

Table 5 shows the revised vacant buildable land estimate by plan designation (redevelopable land is discussed in the next section). We allocate land by anticipated use based on plan designation and the mixed use allocations described in the previous section.

Table 5. Revised Buildable Land Estimate by Plan Designation, UGB, 1996-2020

Plan Designation	Vacant Unconstrained Acres					
	Total	Residential	Commercial	Industrial	Public	Conservation
Agriculture/Open Space						
Agriculture (A)	29.1				29.1	
Conservation (C)	-				-	608.3
Subtotal	29.1	-	-	-	29.1	608.3
Commercial						
Central Business District (CB)	3.2		3.2			
Professional Office (PO)	41.3		41.3		-	
Subtotal	44.5	-	44.5	-	-	-
Industrial						
General Industrial (GI)	799.5			799.5		
Intensive Industrial (II)	137.6			137.6		
Limited Industrial (LI)	10.9			10.9		
Research-Technology Center (RTC)	65.4			65.4		
Subtotal	1,013.3	-	-	1,013.3	-	-
Mixed Use						
Intensive Development Sector (IDS)	215.7	161.8	53.9			
Limited Office-Industrial (LIO)	123.3	-	37.0	86.3		
Mixed Use Commercial (MUC)	137.0	13.7	123.3	-		
Mixed Use Employment (MUE)	52.5	5.3	10.5	36.8		
Mixed Use Residential (MUR)	83.6	62.7	16.7	4.2		
Subtotal	612.1	243.4	241.4	127.3	-	-
Public-Institutional (PI)	72.0	-	-	-	72.0	-
Residential						
Low Density Residential (LD)	3,663.9	3,663.9				
Medium Density Residential (MD)	656.3	656.3				
Medium-High Density Residential (MHD)	247.2	247.2				
High Density Residential (HD)	6.0	6.0				
Subtotal	4,573.5	4,573.5	-	-	-	-
TOTAL	6,344.6	4,816.9	285.9	1,140.6	101.1	608.3

Source: LCOG based on 1996 Corvallis GIS data, analysis by ECONorthwest

REDEVELOPABLE LAND

Redevelopment potential deals primarily with parcels with developed structures that are judged as likely to be demolished and replaced by new buildings. In the original analysis, commercial, industrial, and multi-family (Zoning Districts RS-12 or RS-20) were assumed to have redevelopment potential. In the revised analysis, we include lands in mixed use designations.

Not all, or even a majority, of tax lots that meet these criteria for redevelopment potential are assumed to redevelop during the planning

period. In the June report, we assumed that 25%of land with improvement to land value ratios of less than 1:1 would redevelop during the 20-year planning period. Based on these criteria, we estimate that about 127.5 acres will be redeveloped during the planning period. This is slightly higher than the 113 acres identified in the June analysis.

Table 6. Estimate of Redevelopable Land

Plan Designation	Redev. Acres
Comm/Office	
Central Business District (CB)	11.7
Professional Office (PAO)	3.3
Subtotal	**15.0**
Industrial	
General Industrial (GI)	15.7
Intensive Industrial (II)	15.0
Research-Technology Center (RTC)	5.1
Subtotal	**35.8**
Mixed Use	
Intensive Development Sector (IDS)	17.7
Limited Office-Industrial (LIO)	3.3
Mixed Use Commercial (MUC)	32.9
Mixed Use Employment (MUE)	4.8
Mixed Use Residential (MUR)	3.0
Subtotal	**61.7**
Residential	
Medium-High Density Residential (MHD)	7.1
High Density Residential (HD)	7.9
Subtotal	**15.0**
TOTAL	**127.5**

Source: LCOG based on 1996 Corvallis GIS data, analysis by ECONorthwest

CONCLUSIONS

Table 7 shows estimated future land need and supply by plan designation for the Corvallis *UGB* between 1996 and 2020. The estimated total land need, for all types of land, is 2,131 vacant, unconstrained acres for the period between 1996 and 2020. The estimated supply is 5,798 unconstrained vacant or redevelopable acres and 674 mixed use acres in 1996, leaving an overall surplus of 4,341 acres.

Table 7. Comparison of Land Need and Supply, *UGB*, 1996-2020

Plan Designation	Land Need: Net Acres	Land Need: Gross Acres	Land Supply: Unconst. Vacant Acres	Land Supply: Redev Acres[a]	Land Supply: Total Buildable Acres	Mixed Use Allocation	Surplus/ Deficit
Agriculture			29		29	-	29
Commercial/Office							
Commercial (CB/LC/SA)	60	76	3	12	15	158	97
Office (PAO)	176	220	41	3	45	103	-72
Comm/Office Total	236	296	44	15	59	261	25
Industrial							
Heavy Industrial (GI/II)	35	44	937	31	968	20	944
Light Industrial (LI/RTC)	86	108	76	5	81	130	103
Industrial Total	121	152	1,013	36	1,049	150	1,047
Mixed Use[b]							
Intensive Development Sector	See text		216	18	233	-	233
Limited Office-Industrial			123	3	127	-	127
Mixed Use Commercial			137	33	170	-	170
Mixed Use Employment			53	5	57	-	57
Mixed Use Residential			84	3	87	-	87
Mixed Use Total			612	62	674	-	674
Public Institutional	672	739	72		72	-	-667
Residential							
Low Density Residential	430	558	3,664		3,664	32	3,139
Medium Density Residential	156	199	656		656	172	629
Medium-High Density Residential	129	161	247	7	254	41	134
High-Density Residential	24	26	6	8	14	18	5
Residential Total	738	944	4,573	15	4,588	263	3,907
Total, All Designations[c]	1,767	2,131	5,732	66	5,798	674	4,341

Source: ECONorthwest, 1998.

[a] Redevelopable land includes commercial, industrial, and multi-family residential (medium-high and high) land.

[b] No land need was allocated to this sector. Mixed use allocations are shown in a separate column. Total mixed use allocation sums to vacant buildable acres in mixed use designations as shown by the shaded cells

[c] Some numbers may not add exactly because of rounding. The Total Buildable Acres value does not include acres in mixed use designations, those are shown in the mixed-use allocation column

Table 8 shows estimated future land need and supply by plan designation for the Corvallis *city limit* between 1996 and 2020. The estimated total land need, for all types of land, is 2,131 vacant, unconstrained acres for the period between 1996 and 2020. The estimated supply is 2,316 unconstrained vacant or redevelopable acres and 257 mixed use acres in 1996, leaving an overall surplus of 185 acres.

Table 8. Comparison of Land Need and Supply, *City Limit*, 1996-2020

Plan Designation	Land Need: Net Acres	Land Need: Gross Acres	Land Supply: Unconst. Vacant Acres	Land Supply: Redev Acres[a]	Land Supply: Total Buildable Acres	Mixed Use Allocation	Surplus/ Deficit
Agriculture			10		10	0	10
Commercial/Office							
Commercial (CB/LC/SA)	60	76	3	12	15	98	37
Office (PAO)	176	220	41	3	44	49	-127
Comm/Office Total	236	296	44	15	59	147	-90
Industrial							
Heavy Industrial (GI/II)	35	44	417	13	430	12	398
Light Industrial (LI/RTC)	86	108	76	5	81	64	37
Industrial Total	121	152	493	18	511	76	435
Mixed Use[b]							
Intensive Development Sector	see text				-		0
Limited Office-Industrial			50	1	51		51
Mixed Use Commercial			123	29	152		152
Mixed Use Employment			31	4	35		35
Mixed Use Residential			19	-	19		19
Mixed Use Total			223	34	257		257
Public Institutional	672	739	72		72		-667
Residential							
Low Density Residential	430	558	892		892	7	341
Medium Density Residential	156	199	407		407	22	230
Medium-High Density Residential	129	161	87	7	94	3	-64
High-Density Residential	24	26	6	8	14	-	-12
Residential Total	738	944	1,392	15	1,407	33	496
Total, All Designations[c]	1,767	2,131	2,234	82	2,059	257	185

Source: ECONorthwest, 1998.

[a] Redevelopable land includes commercial, industrial ,and multi-family residential (medium-high and high) land.

[b] No land need was allocated to this sector. Mixed use allocations are shown in a separate column. Total mixed use allocation sums to vacant buildable acres in mixed use designations as shown by the shaded cells

[c] Some numbers may not add exactly because of rounding. The Total Buildable Acres value does not include acres in mixed use designations, those are shown in the mixed-use allocation column

Tables 7 and 8 suggest that public/institutional and commercial designations have land deficits. Those estimates are misleading.

The City has a deficit (estimated at 667 acres) of vacant public and institutional land. Well over half of the need derives from the City's policy stating that it should add 35 acres of parkland for every 1,000 people added to the City's population. For these uses the City is probably not required to re-designate land to address the potential deficit. The City can rely on its oversupply of low-density residential land, its subdivision and PUD process, and the land taken out of the buildable land inventory because of its natural features (e.g., steep slopes, wetlands, floodplains) to meet much of this need.

Moreover, the City presently has more than 600 acres designated for conservation (plan designation Conservation/Open Space).

The deficit of commercial land is a result of the fact that, to be consistent with previous methods, no commercial employment was initially allocated to mixed use designations. The revised comprehensive plan map and designations include four new mixed use designations that are intended to accommodate a portion of residential, commercial, and industrial land need. Although the mixed use designations assign the amount of office use to likely occur, there is flexibility in the total amount that could occur. Therefore, it is anticipated that the projected office deficit of 72 acres from Table 7 would likely be accommodated if the demand warrants. Table 7 shows 674 buildable acres to which no residential or employment growth (i.e., need) has been allocated.

Table 9 shows vacant and redevelopable land and development potential on mixed use designations by plan designation. This table provides one scenario of how mixed use lands might develop. It allocates land to specific plan designations. That allocation is reflected in the "mixed use allocation" column in Table 7.

Table 9. Allocation of Mixed Use Buildable Land (Vacant and Redevelopable) to Residential, Commercial, and Industrial Plan Designation (for UGB)

Plan Designation	Buildable Land		
	Percent Allocated to Major Use	Percent Allocated to Sub-Use	Acres
Intensive Development Sector (IDS)			
Residential	**75%**		**175.0**
Medium Density Residential (MD)		70%	122.5
Medium-High Density Residential (MHD)		20%	35.0
High Density Residential (HD)		10%	17.5
Comm/Office	**25%**		**58.3**
Commercial (CB/LC/SA)		70%	40.8
Office (PO)		30%	17.5
Subtotal	**100%**		**233.4**
Limited Office-Industrial (LIO)			
Comm/Office	**30%**		**38.0**
Office (PAO)		100%	38.0
Industrial	**70%**		**88.6**
Light Industrial (LI/RTC)		100%	88.6
Subtotal	**100%**		**126.6**
Mixed Use Commercial (MUC)			
Residential	**10%**		**17.0**
Medium Density Residential (MD)		100%	17.0
Comm/Office	**80%**		**135.9**
Commercial (CB/LC/SA)		75%	102.0
Office (PAO)		25%	34.0
Industrial	**10%**		**17.0**
Light Industrial (LI/RTC)		100%	17.0
Subtotal	**100%**		**169.9**
Mixed Use Employment (MUE)			
Residential	**10%**		**5.7**
Medium-High Density Residential (MHD)		100%	5.7
Comm/Office	**20%**		**11.5**
Commercial (CB/LC/SA)		85%	9.7
Office (PAO)		15%	1.7
Industrial	**70%**		**40.1**
Heavy Industrial (GI/II)		50%	20.1
Light Industrial (LI/RTC)		50%	20.1
Subtotal	**100%**		**57.3**
Mixed Use Residential (MUR)			
Residential	**75%**		**65.0**
Low Density Residential (LD)		50%	32.5
Medium Density Residential (MD)		50%	32.5
Comm/Office	**20%**		**17.3**
Commercial (CB/LC/SA)		30%	5.2
Office (PAO)		70%	12.1
Industrial	**5%**		**4.3**
Light Industrial (LI/RTC)		100%	4.3
Subtotal	**100%**		**86.6**
TOTAL			**673.8**

Source: Percentages from City of Corvallis, calculations by ECONorthwest.

Summary

The City of Corvallis is going through "periodic review" of its comprehensive plan as required by the Land Conservation and Development Commission. As part of that review it must update its estimate of buildable land (residential and non-residential) and assess whether it has sufficient buildable land within its Urban Growth Boundary (UGB) to accommodate the next 20 years of development that expected growth in population and employment will require. In addition, an evaluation of buildable land and land needs provides basic information to meet other requirements of the periodic review process.

The information presented in this report complies with the requirements of ORS 197.296 (House Bill 2709). It can also be of use in evaluating other policies debates, such as:

- Update of Comprehensive Plan policies. On the one hand, a plentiful inventory of land within the UGB may provide more opportunity for natrual resource protection measures to be implemented without requiring UGB expansion. On the other hand, a projected shortage of land supply may support policies to increase the density of land development in order to reduce the need for a UGB expansion.
- Updates of Comprehensive Plan land use map during periodic review.
- Review of future Comprehensive Plan amendments and land development applications.

The reader should consider the following points when considering the information contained within this report:

- The information reflects an analysis of land supply and demand at one point in time, in this case, July 1, 1996. Actions that have occurred after that time will not be accounted for in the data or conclusions reached within this report.
- The report was developed with the consideration of past trends and is based on a range of assumptions about the amount and characteristics of land supply and future growth. Trends and assumptions are subject to changes that impact their applicability.
- Estimates of buildable land are based on numerous assumptions and other factors (e.g., data availability, assumptions about redevelopment). These estimates should be interpreted as a reasonable approximation of the amount of area in each category, not as an absolute value.
- The report discusses the issue of long-run supply inventories and short-term constraints such as zoning, service availability and market forces that impact the amount of land available for development. The potential of having an adequate long-term supply of various land use types while simultaneously experiencing short-term scarcity of parcels ready for development at prices developers are willing to pay should be considered when the City develops policies or makes

decisions on land development proposals or other decisions that affect land use or development.

- As policy, mapping, and other land use decisions are made, it should be recognized that many other factors need to be considered. For example, Statewide Planning Goal 9 provisions may require that the City look at the parcelization patters and serviceability of industrial land in addition to the basic inventory of acreage established through the supply and demand analysis. Other data sources, community desires, and experiences may also be pertinent. Periodic review requires the City to address any new planning requirements adopted by the State since the City's last review of its comprehensive plan. In particular, ORS 197.296 (originally HB 2709) specifies may of the details that a housing needs analysis must consider.

A land inventory and need analysis that complies with state requirements for long-run planning is not the same as a market analysis for a development proposal, which typically has a short-run view (1-3 years). In the short-run, land available for development may be constrained by lack of proper zoning, lack of services, neighborhood opposition to development, the situation and expectations of land owners and users, and so on. In the long-term, it is reasonable to assume that prices, preferences, and policies will adjust so that land that is vacant and buildable becomes available for development. Thus, it is not uncommon for a long-run land need inventory to find sufficient land supply to meet state requirements at the same time land and housing prices are rising and developers and builders are having difficulty finding buildable land at prices they are willing to pay.

Those details are not addressed in this report. The summary that follows focuses only on the conclusions of the report.

THE CITY HAS SUFFICIENT LAND WITHIN ITS UGB TO ACCOMMODATE POPULATION AND EMPLOYMENT GROWTH UNDER A WIDE RANGE OF ASSUMPTIONS ABOUT THE AMOUNT AND CHARACTERISTICS OF GROWTH AND LAND

Table S-1 shows estimated future land need and supply by plan designation for the Corvallis UGB between 1996 and 2020. The estimated total land need, for all types of land, is 2,131 vacant, unconstrained acres for the period between 1996 and 2020. The estimated supply is 6,375 unconstrained vacant or redevelopable acres in 1996.

The land need/supply comparison shown in Table S-1 indicates that Corvallis has sufficient buildable lands within its UGB to meet needs between 1996 and 2020. Moreover, a comparison of land need and vacant or redevelopable lands inside the city limits indicate that Corvallis has a net surplus of about 500 acres of buildable land.

Table S-1. Comparison of land need and land supply, Corvallis UGB, 1996-2020

Plan Designation	— Land Need — Net Acres	Gross Acres	——— Land Supply ——— Unconst. Vacant Acres	Redev Acres	Total Buildable Acres	Mixed Use Allocation	Surplus/ Deficit
Agriculture			29		29	-	29
Commercial/Office							
Commercial (CB/LC/SA)	60	76	3	12	15	158	97
Office (PAO)	176	220	41	3	45	103	-72
Comm/Office Total	236	296	44	15	59	261	25
Industrial							
Heavy Industrial (GI/II)	35	44	937	31	968	20	944
Light Industrial (LI/RTC)	86	108	76	5	81	130	103
Industrial Total	121	152	1,013	36	1,049	150	1,047
Mixed Use							
Intensive Development Sector	See text		216	18	233	-	233
Limited Office-Industrial			123	3	127	-	127
Mixed Use Commercial			137	33	170	-	170
Mixed Use Employment			53	5	57	-	57
Mixed Use Residential			84	3	87	-	87
Mixed Use Total			612	62	674	-	674
Public Institutional	672	739	72		72	-	-667
Residential							
Low Density Residential	430	558	3,664		3,664	32	3,139
Medium Density Residential	156	199	656		656	172	629
Medium-High Density Residential	129	161	247	7	254	41	134
High-Density Residential	24	26	6	8	14	18	5
Residential Total	738	944	4,573	15	4,588	263	3,907
Total, All Designations[c]	1,767	2,131	5,732	66	5,798	674	4,341

Source: ECONorthwest, 1998.

[a] Redevelopable land includes commercial, industrial and multi-family residential (medium-high and high) land.

[b] No land need was allocated to this sector. The Intensive Development Sector is a mixed use designation that can accommodate residential and commercial uses.

[c] Some numbers so not add exactly because of rounding.

Table S-1 does not allocate any land need to mixed use designations.[1] But these designations include 674 buildable acres that can be used to meet a portion of residential, commercial, and industrial land need. The next section shows that when mixed use land is considered, the deficits in commercial and high-density residential land are eliminated.

[1] The technical reasons that such an allocation was not made are described in a memorandum from ECO to Corvallis dated 22 October 1998.

THE CITY HAS SUFFICIENT LAND DESIGNATED RESIDENTIAL, COMMERCIAL AND INDUSTRIAL TO ACCOMMODATE EXPECTED GROWTH, BUT IT LACKS SUFFICIENT PUBLIC/INSTITUTIONAL LAND

State statutes and good planning require a more detailed evaluation to determine whether the buildable land inside the UGB is planned in such a way that the amount of buildable land by plan designation (e.g., medium-density residential) is adequate to meet the needs for that use. It is obviously possible to have a surplus of land in the UGB in the aggregate, but not enough land designated for certain types of use.

Not only does Corvallis have more than sufficient buildable land within the existing urban growth boundary to meet long-term growth needs; it also has sufficient buildable land designated for residential and industrial uses to meet projected needs for these broad land use categories.

Table S-1, however, shows that some designations have land deficits. These estimates are misleading. The revised comprehensive plan map and designations include four new mixed use designations that are intended to accommodate a portion of residential, commercial, and industrial land need. Because the City does not have a history of this type of mixed use development, it is difficult to predict demand for this type of land. We can, however, estimate development capacity of mixed use designations.

Table S-2 shows vacant land development potential on mixed use designations under a set of conservative assumptions. The estimates are based on the vacant acreages for mixed use designations allocated using the assumptions provided by the Buildable Lands Committee. The figures show that the mixed use designations provide enough land to compensate for the deficit in residential and commercial land.

Table S-2. Vacant land and development potential on mixed use designations

Plan Designation	Residential	Commercial	Industrial
Vacant Unconstrained Acres			
Intensive Development Sector (IDS)	161.8	53.9	-
Limited Office-Industrial (LIO)	-	37.0	86.3
Mixed Use Commercial (MUC)	13.7	123.3	-
Mixed Use Employment (MUE)	5.3	10.5	36.8
Mixed Use Residential (MUR)	62.7	16.7	4.2
Total Acres	**243.4**	**241.4**	**127.3**
Surplus/Deficit (form table 7)	-12.0	-237.0	897.0
Revised Surplus/Deficit	**231.4**	**4.4**	**1,024.3**

Source: ECONorthwest, 1998.

The City has a substantial deficit (estimated at 667 acres) of vacant public and institutional land. Well over half of the need derives from the City's policy stating that it should add 35 acres of parkland for every 1,000 people added to the City's population. For these uses the City is probably not required to re-designate land to address the potential deficit. The City can rely on its oversupply of low-density residential land, its subdivision and PUD process, and the land taken out of the buildable land inventory because of its natural features (e.g., steep slopes, wetlands, floodplains) to meet much of this need. Moreover, the City presently has more than 600 acres designated for conservation (plan designation Conservation/Open Space).

THE CITY GENERALLY MEETS THE MORE DETAILED REQUIREMENTS OF STATE HOUSING POLICY

Manufactured homes on individual lots are permitted in all of the City's residential districts. Just the City's zoning districts that implement Low-Density Residential (RS-3.5, RS-5 and RS-6) contain more than enough land for residential development. There is no need to determine the need for manufactured homes on individual lots separate from the need for single-family housing in general.

Manufactured dwelling parks must be allowed in a zone or zones that allow from 6-12 dwelling units per acre. Table S-1 shows the City's Medium-Density Residential designation (which allows 6-12 dwelling units per acre) has a significant surplus of buildable land. Therefore, the City has sufficient buildable land to meet identified need for manufactured home parks.

Much of the shortage of buildable land exists in the Medium-High- and High-Density Residential plan designations will be handled through development and re-development in the City's mixed-use zones. The City should consider, however, rezoning some Low-Density or Medium-Density Residential land to Medium-High- and High-Density Residential.

Corvallis has not established special review standards for government assisted or farm worker housing. These housing "types" are allowed within the City's residential zoning districts based on review standards that apply equally to all proposed housing developments, regardless of funding sources or end-users. Thus, these housing types are subsumed within the broader single-family and multi-family categories and subcategories.